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AGRICULTURE

No. 141

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I. GENERAL INFORMATION

AGRICULTURAL READJUSTMENT, ZONING SUPPORTED

Beijing GUANGMING RIBAO in Chinese 19 Apr 81 p 1

[Editorial: "Make a Success of Agricultural Zoning, Readjust Agricultural Production"]

[Text] Since agricultural capital construction investments have been decreased during the period of readjustment of the national economy, how can agricultural production keep moving ahead? The experience of Nong'an County and Lingbao County can give us inspiration: provided that the "left" influences are rooted out, while we further improve the various forms of the production responsibility system and mobilize the cadres' and masses' enthusiasm, it is possible by readjusting the internal structure of agriculture and crop disposition according to local conditions and developing pluralistic operations to achieve a maximum economic result with a relatively small investment and achieve a lively state of affairs in which all five aspects of agriculture are flourishing.

Readjustment of the internal structure of agriculture must be based on systematic, thorough surveys and scientific research on natural resources; it cannot be undertaken blindly or haphazardly. To achieve this aim, it is necessary to make a success of county-level agricultural zoning. According to the statements of representatives of various areas who participated in the recent national work conference on agricultural zoning, many counties which have carried out agricultural zoning and used its results to readjust the agricultural production structure not only had higher grain yields but also experienced rapid development of forestry, stock raising, fish raising and other sidelines, so that the collective and commune members were able to have surpluses rather quickly. This year, 70 percent of the country's counties will carry out agricultural zoning work; this will be extremely important in raising agricultural production during the economic readjustment period, and leadership at all levels must make an energetic effort to succeed in the undertaking.

According to comments from various localities, the key to success in county-level agricultural zoning is leadership by the county party committee, and especially personal involvement by the main responsible comrades. The leadership of some county committees has viewed agricultural zoning as a nonessential undertaking, and the steps they have taken have not been very effective. The main reason is that these comrades are used to following a familiar course and have not realized the necessity and urgency of readjusting the current agricultural production structure; they seem to have no plans, or no courage, to readjust the proportions between food production and forestry, stock raising, fish raising and other sidelines and to change the current situation, which is at odds with the principle of planting what is suited to the land. There are some other comrades who, after seeing the decrease in last year's grain production statistics, want to put the brakes on the agricultural readjustment which has just gotten rolling, or even to turn back. Many years' lessons have made it clear that this approach is extremely harmful. We know that to increase agricultural production we must proceed in accordance with our country's actual circumstances. What are our country's actual circumstances? Simply stated, we have few plains areas and little arable land suitable for planting grains, while we have many hills, mountains and grasslands which are not suitable for grain growing, and an extensive water area suitable for aquatic products. Given these characteristics, if we wish to increase our country's agricultural production, we naturally must do what is most suitable under local conditions, and while making an energetic effort in grain production, we should give great attention to forestry, stock raising, fish raising and other sidelines. Only in this way can we accentuate our advantages and avoid our shortcomings, and thoroughly and rationally utilize our natural agricultural resources. However, for a rather long period in the past, we looked only at grain production, and planted many lands to grain which were not suited to it, or even made man-made plains, [illegible] lakes to make fields and destroyed forests to grow grain, thus letting grain squeeze out forestry, stock raising, fish raising and pluralistic operations; in order to pursue grain growing, we ignored the economic consequences and blindly expanded the area under the "triple cropping system," increased the planting of wheat and corn and the like. The result was that although we had a temporary increase in grain production, this unavoidably crowded out the pluralistic operations and family sidelines so that there was an imbalance within agriculture, natural resources were damaged and the commune members' income was affected. This makes it thoroughly clear that in order to improve our country's agriculture, we must readjust it.

When some comrades hear the word "readjustment" they worry that grain production may drop. Actually they need not feel this way: it is an expression of lack of faith in the masses and in science. Grain production and forestry, stock raising, fish raising and other sidelines are important components of overall agriculture which support and promote each other. Although they do have the contradition of competing with each other for land, provided that we rely on the scientific bases of agricultural zoning, fix suitable proportions between them and gradually carry out a readjustment, they will all develop rather rapidly. This is a truth which many localities' experience has repeatedly demonstrated. The relevant leadership comrades should eliminate some of these unnecessary misgivings, strengthen their leadership, and effectively and energetically carry out agricultural zoning and thus provide a scientific basis for the readjustment of agriculture.

Of course, agricultural zoning is a long-term, fundamental endeavor aimed at guiding scientific cultivation, and its effect is not limited to merely finding a scientific basis for readjusting the internal structure of agriculture, most importantly, it provides the foundation for guiding agricultural modernization and scientific cultivation. Accordingly, when the various localities carry out agricultural zoning, they must have a rigorous scientific attitude and a thrist for the truth; they must be firmly based in the present but also think of the long term; they must be concerned not only with rates of progress, but also with quality. Counties which have already carried out agricultural zoning must conscientiously guide agricultural production on this basis, and counties which are just starting or have not yet begun to carry out agricultural zoninz must put some effort into making a success of this work. A haphazard approach or an impressive appearance without substance are two tendencies which we must resolutely oppose.

We earnestly hope that as a result of this development of agricultural zoning work, leadership cadres at all levels on the agricultural front will whip up a wave of enthusiasm for surveys and research, will stress the scientific cultivation approach and will achieve new successes which will develop our country's agriculture and make the Chinese people flourish.

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CSO: 4007/388

BRIEFS

FUJIAN RAPESEED--Commune members of Minqing County, Fujian Province, had delivered 400,000 jin of rapeseed to the state by 4 May. This was some five times more than the record for the corresponding period of last year. The county planted 24,000 mu of rape last winter. [OW150003 Fuzhou Fujiang Provincial Service in Mandarin 1035 GMT 14 May 81]

PREFECTURE TOBACCO PROCUREMENT--As of the end of April, Fujian's Longxi Prefecture had procured over 50,000 dan of flue-cured tobacco, a 40 percent increase over the same period in 1980. It is estimated that the prefecture will procure some 155,000 dan this year as a bumper harvest is expected from the 140,000 mu of flue-cured tobacco in the prefecture. [OW150003 Fuzhou Fujian Provincial Service in Mandarin 1035 GMT 13 May 81]

CSO: 4007/396

COMBATING DROUGHT IN SHIJIAZHUANG, BAODING, CANGZHOU DISCUSSED

Drought Situation in Shijiazhuang

Shijiazhuang HEBEI RIBAO in Chinese 13 Apr 81 p 1

[Article by Wang Fengchun [3769 7364 2504], Xu Chunqi [6079 2504 3305], and Zeng Zhuzhu [2582 3796 3796]]

[Text] Shijiazhuang Prefecture has made full use of the benefits of water conservancy facilities and has exploited use of underground water resources to expand its irrigated area. Right now, a workforce numbering more than 990,000 people is combatting drought in the prefecture. More than 48,000 motor-pumped wells, as well as more than 56,000 draining and irrigating machines of various kinds are in operation. Of the prefecture's 4.95 million mu of wheatfields, 4.48 million mu have been watered once, and 1.86 million mu have been watered twice.

Since the beginning of April, as the drought has deepened, cadres from the prefecture, county, and commune levels have hurled themselves into the front line of struggle to combat drought. They have aroused the masses to tap water resources and conserve use of water, and they have made full use of the benefits of motor-pumped wells and machinery in combatting the drought. As a result of a general survey of motor-pumped wells and the forecasting of changes in the underground water table, each of the counties on the plain has reduced the level of pumping earlier than planned. Each of the counties in mountain areas practiced self-reliance, using native methods to start projects, sank deep wells, repaired old wells, and dammed the flow of streams in a combination of efforts to tap by every manner of means underground water resources. Throughout the prefecture, 1,470 new motor-pumped wells were sunk; 2,070 old wells were put back in condition, and 721 wells were fitted with motors. In Shulu County, the country raised 280,000 yuan, and communes and brigades chipped in more than 2 million yuan to sink 468 new wells, to repair 550 dilapidated wells, and to buy 400 deep well pumps in order to hasten the rate of progress in irrigating the wheat.

In order that limited underground water resources might play an even greater role, various forms of a system of personal responsibility were promoted throughout the prefecture by communes and brigades for their motor-pumped wells and machinery. Methods used included contracting work for total jobs, accounting for individual machines, "five fixeds and one reward," and special teams for watering the wheat.

The prefecture's communes and brigades persisted in sensible irrigation, the irrigation of key areas, and prompt hoeing to conserve moisture following watering. Some communes and brigades also used every manner of means to conserve use of water, employing methods such as repairing ditches to prevent leaks, pushing scrapers through the ditches, and converting large plots into small plots. The Prefecture Water Conservancy Bureau also set up 56 underground water monitoring stations, studied and observed experiences whereby wheatfields produced high outputs while conserving use of water, helped the people change their lopsided views of "much manure and frequent waterings" as being necessary to win high output, and helped the people use water rationally for irrigation, and to water in key ways to attain results in both saving water and producing high outputs.

Baoding Prefecture Drought Situation

Shijiazhuang HEBEI RIBAO in Chinese 13 Apr 81 p 1

[Article by Zhang Yongqing [1728 3057 1987], and Xin Yanle [6580 1750 2867]]

[Text] The Baoding Prefecture CCP Committee and prefecture administrative offices have diligently strengthened leadership and mobilized cadres and the masses for a war posture in the current campaign to combat drought and water the wheat. Statistics from 6 April show active motor-pumped wells in the prefecture number more than 32,100; machines and implements to combat drought number more than 36,000, and that 3.93 million mu of wheat has already been watered, more than 1 million mu more than during the same period last year. Top dressing of fertilizer has been applied to 4 million mu of wheat.

Since the lunar New Year, the Baoding CCP Committee and prefectural government administrative offices have promptly mobilized all echelons of leadership to go down to the grassroots to probe the true situation there, and to strengthen leadership for spring plowing and production. Eleven members of the Standing Committee of the Prefecture CCP Committee took the lead in dividing up work and assigning duties to counties and the prefecture. The counties transferred 3,400 cadres to go to communes and brigades to take charge of combat against drought by watering the wheat, and spring plowing and production. Investigation has revealed that during the previous period, some commune and brigade cadres had a paralysis mentality and a psychology of trusting to luck, while others had a mentality of waiting for the heavens to send rain, which impaired the rate of progress in watering the wheat. In light of this state of affairs, the Prefecture CCP Committee and government administrative offices organized the Prefecture Agriculture Bureau, the Agricultural Society, and the Agricultural Research Institute, and also invited the agricultural university and agricultural experts to participate in a survey of the condition of wheat seedlings and soil moisture in early March. Examination and analysis showed that 6.48 million mu of wheat in the prefecture lacked adequate moisture; 4.43 million mu were moisture deficient, and dead seedlings were found in 1 million mu. Behind the good seedling situation lurks a latent grave danger of loss of moisture and dead seedlings.

The Prefecture CCP Committee and government administrative offices emphasized that cadres sent to the countryside from all echelons should devote their main energies to solving mental impediments to combating drought and watering the wheat. They also required all echelons to strengthen leadership, and solidly help grassroots levels resolve mental impediments and practical problems. A deputy commissioner from the prefecture government who visited Xinxing Production Brigade in Li County found that this brigade lacked a perception of the urgency of wheat watering, and had first watered the as yet unplanted ground before watering the wheat. On that very night, he convened a meeting of production team leaders to analyze this year's wheat seedling and soil moisture situations so that everyone would grasp the importance of watering the wheat, and change their former plans in favor of urgently watering the wheat first. Ding County transferred more than 800 cadres to look after villages and teams. They gave different guidance and took different action for fields where the moisture situation was good, for sandy soil fields, for fields not watered by the melting of winter ice, and fields containing less than 15 percent moisture, hastening the pace of watering of the wheat. By 5 April, 750,000 mu of wheat throughout the county had been watered once, and 110,000 mu had been watered twice.

Drought Situation in Cangzhou

Shijiazhuang HEBEI RIBAO in Chinese 13 Apr 81 p 1

[Article by Zhen Cun [3122 0948], Jing Feng [2529 1496], and Guang Rong [1684 2837]]

[Text] Cangzhou Prefecture, which acted quite belatedly to combat drought and water its rice, and in which progress was slow early on, has recently rapidly caught up, thanks to the adoption of vigorous action by all echelons. As of 3 April, an area of wheatfields totaling 1.72 million mu in the prefecture had been watered, more than 700,000 mu more than during the same period last year. Deep and shallow motor-pumped wells in the prefecture, numbering more than 5,000, have been rapidly increased to more than 22,000. Newly sunk deep and shallow motor-pumped wells number 1,446; various wells number 4,335, and 16,624 "old man happy" [5071 7333 2867] wells have been sunk.

Taking account of the low utilization rate of well equipment during an earlier period, the high losses, and the severe cost of diesel fuel, the Cangzhou CCP Committee and government administrative offices emphasized promotion throughout the prefecture of the experiences of the Zhangguanling Production Brigade in Cang County with "five fixeds and one reward" in operating motor-pumped wells. One after another, each county and commune also convened on-site meetings to summarize and promote their own local representative experiences, with the result that, for most of the active pump-driven wells in the prefecture, various forms of a system of responsibility were instituted such as "five fixeds and one reward," and special persons contracting for work to meet fixed quotas. This greatly accelerated the pace of watering and saved expenditures. At the same time, most communes and brigades established special teams or units in charge of water, and instituted contracting for work against fixed quotas, or a contract system with rewards or penalties according to how well tasks were completed. This gave impetus to the sinking of new wells, the repair of old wells, much digging of channels in rivers and in canals. In the increased tapping of water resources, each locale adhered to tailored guidance. Places having fairly extensive water resources not far below the surface mostly aroused the masses to dig shallow wells, vacuum wells, or radiation wells. Places along rivers and watercourses organized massive digging of channels within rivers, channels within canals, and pits within pits. In places lacking a layer of water just beneath the surface, every manner of means was used to collect funds for the sinking of deep wells, together with the development of shallow layers of salt water, which was mixed with fresh water for watering.

In order to rescue the wheat in drought areas, some communes and brigades instituted contracting for production with households or contracting for entire jobs, aroused countless households to concentrate resources, and organized males, females, the old, and the young to "bring on the water." The Haixing County Beancurd Shop Brigade concluded contracts with households according to the workforce each household contained for the care of 300 mu of droughtland wheat. The village's 210 households bought 170 "old man happy [wells], and within the short space of 3 days fielded more than 300 people to make a rush effort in watering 110 mu.

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FIGHTING DROUGHT TO ENSURE SPRING PLANTING, SUMMER HARVEST

Situation in Chengde Prefecture

Shijiazhuang HEBEI RIBAO in Chinese 19 Apr 81 p 1

[Article by Yinzhong [1438 1813], Dianming [3013 2494], Shuben [2885 2609], and Zhiqiang [1807 1730]]

[Text] Chengte Prefecture has improved upon its past method of reliance on watering to combat drought and do planting, adopting multiple agricultural methods suited to realities in mountain areas to take firmly in hand combat against drought and rush planting. As of 15 April, more than 638,000 mu of open field crops had been sown throughout the prefecture.

For several years in the past, Chengde Prefecture's combat against drought has centered on the word water, relying on watering to begin seeding. As a result, the sowing season was frequently delayed for lack of water and lack of rainfall, causing reductions in output, and a rise in costs for that seeding that could be done with watering. This year the Prefecture CCP Committee and administrative offices in government summarized the lessons of experience to take multiple actions in meeting the needs of combat against drought and planting, meaning that they took different actions depending on the soil moisture picture in different places. In places where moisture was inadequate, water was carried in buckets on shoulder poles and the seeds dibbled into the ground; in plots deficient in moisture, moisture was supplemented and rush planting done. In mountain ravine and slope areas, numerous antiaotian [100A 2742 3944] fields were dug and careful timely planting done over the entire area containing moisture. Furthermore, following local experiences, the sunny sides of slopes were planted before the shady side of slopes, and hilly areas were planted before flat lands, with the period for planting being scientifically arranged according to the length of the growing season of the crops planted. Pingquan County promoted the experience with "three carefuls and one protection" of Yamenzi Commune in careful preparation of the soil, careful treatment of seeds, careful planting, and protection of seedlings, in the promotion of the techniques of careful farming during spring sowing.

Chengde Prefecture also readjusted its crop pattern to make the most of drought resistant varieties in combatting drought. This year, it greatly increased the area sown to millet and soybeans. In an effort to increase crop varieties sown and to assure high output, each locale went in for intercropping, intercropping corn and millet or soybeans, or gaoliang and soybeans. In addition, it promoted technical measures such as spreading poisoned soil and planting poisoned grains to kill insects, and application of chemical fertilizer to protect and strengthen seedlings. By way of assuring combat against drought in the sowing of seeds to win a bumper harvest in agriculture this year, the entire prefecture vigorously promoted a system of responsibility for production linking individual remuneration to output. Furthermore, in Weichang, Kuancheng, and Chengde counties, training was first given to peasant technicians, rules and regulations were formulated for technicians, and guidance given technicians for their responsibilities in checking so that the quality of sowing would be guaranteed. Commune and brigade cadre established a system of personal responsibility.

Situation in Langfang Prefecture

Shijiazhuang HEBEI RIBAO in Chinese 19 Apr 81 p 1

[Article by Ma Baoyi [7456 1405 5030], Qiao Zhongheng [0829 1350 3801], and Li Lianyin [2621 6647 0603]]

[Text] In the course of "one combat and a pair of protections," Langfang Prefecture aroused the masses to use every possible means of tapping underground water resources. As of now, 1.73 million mu of wheat has been watered throughout the prefecture.

Surface water is seriously short this year throughout the prefecture. In view of this situation, the Langfang Prefecture CCP Committee, and administrative offices in government have concentrated energies on tapping underground water, taking in hand as major measures for combatting drought the sinking of wells, repair of wells, and fitting of wells with equipment. Throughout the prefecture, 145 well digging teams have been organized to dig and equip wells. Each country and commune has set up well repair teams, and brigades and production teams have organized well inspection teams that concentrate on finding wells, repairing wells, and equipping wells. In the digging of wells, every county gives special attention to development of fresh water sources not very far below the surface of the ground. Major attention is given to piped wells, vacuum wells, and dug wells, and such effective measures for combatting drought. Throughout the prefecture, 581 dug wells have been dug. Yongqing, Baxian, Anci, Wenan, and Dacheng have sunk 2,597 vacuum wells. Additionally, throughout the prefecture, channels have been dug in the middle of 10 rivers; more than 1200 kilometers of ditches have been dredged and had channels dug in them. These measures alone have enlarged the watered area of the prefecture by more than 100,000 mu. In order to conserve use of water and cut down on costs, while watering the maximum amount of soil with limited water, work to prevent leaks in ditches has been done in deep well areas, and in sandy soil and saline-alkaline soil areas. Now more than 100,000 meters of leaking ditches have been fixed. In addition, in the porous black earth and highland windblown sand areas, and in former flooded areas, spray irrigation has been developed. Right now 245 spray irrigation devices are in operation.

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HAND IRRIGATION OF WHEAT IN WUAN COUNTY

Shijiazhuang HEBEI RIBAO in Chinese 15 Apr 81 p 1

[Article by Tianyun [1131 0062], Zhangbao [3864 1405], and Rishan [2480 1472]: "Each Member of Wuan County Workforce Contracts For Watering of 0.2 Mu of Dryland Wheat; Uniform Production by Households With The Greater the Output, the More Going to the Household; In Addition to Guaranteeing Irrigation of Wheatfields, Watering Extended To More Than 83,000 Mu of Dryland Wheat"]

> [Text] Editor's Note: Currently faced with a serious drought, Wuan County has acted realistically to parcel out to commune member care a total of 100,000 mu of dryland wheatfields. In most cases, each commune member is responsible for 0.2 mu of land. Some are responsible for watering and, for the most part, calculation of remuneration is linked to output. Responsibility is total, and the greater the harvest, the greater the return to the individual concerned. Practice has shown this to be an effective measure for saving dryland wheat. In every prefecture in the province may be found some dryland wheat. Whenever the masses desire that households contract for the output of such dryland wheat or contract to do work on such dryland wheat, all echelons of leadership should actively give support, and help make arrangements as rapidly as possible. Output quotas may be set somewhat lower than usual, and offset as a part of consumption grain, with output in excess of quota reverting entirely to the household concerned. Either the summer crop alone, or both the summer and the fall crop together may be contracted for. In this way, mass enthusiasm for combatting drought may be fully aroused. The masses will bear an extremely heavy burden in waging a great people's war against drought to win a bumper harvest in agriculture for the summer crop and for the entire year.

Wuan County located in the hilly and mountainous region has a total of 390,000 mu of wheat, only 180,000 mu of which can be irrigated, the other 210,000 mu being dryland wheat that cannot be irrigated. Some communes and brigades deep in the mountains of the west have water problems for both people and livestock. Faced with a deepening drought, the County CCP Committee and the government have taken action. While focusing on maintaining watering of the wheat, and in a spirit of one more mu watered is one more mu, and keeping one-tenth of a mu alive means another one-tenth of a mu, they have called upon the people of the county to overcome their fear of difficulties, stir their revolutionary spirit, and have each member of the workforce become responsible for the watering of 0.2 mu of dryland wheat. Each commune and brigade has parceled out to commune members 100,000 mu of dryland wheat, so much per person or in accordance with ability to work. Aside from some commune and brigade members for whom was instituted a system of a fixed number of personnel with fixed quotas of fixed quality for fixed workpoints with rewards for performance in excess of quotas, most communes and brigades a system of uniform output by individuals or by households totally responsible for output, with the more harvested the greater amount reverting to the individual.

Once this system was instituted, the broad masses of commune members gave serious attention to the dryland wheat parceled out to them, just as in the case of their private plots. Men and women, old and young all pitched in to pull carts and carry things on poles, rising early and working until late. Throughout the county appeared a great upsurge in the use of myriad kinds of containers to combat drought by watering the wheat. Now watering has been extended to more than 83,000 mu of dryland wheat. Mazhuang Commune, located in the mountain fastness, lacked sources of water, and the 8,100 mu of wheat in the commune was totally dryland wheat. After institution of this system, more than 4,000 people were available daily to water the wheat. More than 3,500 people with carrying poles drew water from mountain streams and deep ravines, some of them carrying water up hill for from 4 or 5 li away. After Madiantou Commune had instituted contracts for work and put to use the thin flow from 50 mountain stream sites, in slightly more than a month, more than 200,000 dan of water had been carried to water more than 1,100 mu of dryland wheat. In some communes and brigades where drinking water was a problem, in order to water one-tenth of a mu more, water used for washing vegetables, dishes, and clothing was collected, mixed with feces from latrines and chemical fertilizer, and taken into the fields to water the wheat. Numerous communes and brigades resorted to covering the soil after watering to reduce evaporation and to increase the quality of watering of the wheat.

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CSO: 4007/390

TIMELY ANTI-DROUGHT MEASURES IN HEBEI URGED

Shijiazhuang HEBEI RIBAO in Chinese 25 Feb 81 p 1

[Editorial: "Urgently Mobilize To Overcome the Grave Drought"]

[Text] Drought conditions are continuing in this province. The water level has dropped, with the level of near-surface waters generally falling by 1 to 2 meters and that in deeper-lying strata dropping by 4 to 5 meters. There is insufficient surface water and the amounts of usable water in reservoirs, ponds and waterlogged depressions is 60-70 percent below normal. The precipitation this winter and last spring has been slight, the air temperature is unusually high, there has been serious loss of soil moisture, and more than 28 million mu of fields not plowed under after the harvest have either lost their moisture or have inadequate moisture, while the figure is over 16 million mu for wheat land. The weather forecast is that between this March and May most of this province will have a precipitation 30 percent below normal. Accordingly, vigorous anti-drought measures, efforts to assure good harvests of summer grain and efforts to assure timely spring planting have become an urgent task for this province, brooking no delay.

Since the provincial party committee and government issued their drought emergency notice, many localities have gone into action. But some localities, because of lax leadership, loss of manpower or the agricultural slack season, have still not managed to make a fundamental change. Some of the cadres and masses have slackened their vigilance and are trusting to luck and waiting for rain. Some of them have become pessimistic and fearful on seeing the shortage of water and material resources. All of these attitudes are hindrances to fighting the drought and working to assure a good summer harvest and timely spring planting, and must be resolutely set right.

Under the grave drought conditions, assuring a rich harvest of summer grains, assuring timely spring sowing and going on to reap a bumper harvest for the entire year are extremely critical for the readjustment of the national economy in our province, for arranging for the people's livelihood, and for strengthening and expanding solidarity. In the northern part of the province in particular, there are few summer crops, and generally there is only one crop a year, so that the spring sowing affects the entire year's harvest; some drought-stricken communes and brigades must suitably increase the amount of early-maturing grain crops they plant so as to get the grain rations in early, and good spring sowing work is particularly important in these areas. Accordingly, the leadership at all levels must at all costs avoid laxness and carelessness with regard to the anti-drought and harvesting and sowing measures and must effectively strengthen their leadership, carry out thorough and detailed ideological and political work, overcome various types of negative attitudes which are harmful to the anti-drought work, and go into action at once to fight successfully the first battle for spring planting and production.

Many areas in this province have suffered repeatedly from drought, and many years' experience shows that good wheat field management and good spring sowing will lay the foundation for rich harvests in drought conditions. We must not wait passively for nature to bestow gifts on us. During last year's major drought, many communes and brigades started their anti-drought work early and did it well; they carried out their spring sowing on time, so that the spring seedlings were vigorous, and irrigated the wheat at the right time, so that despite the drought they avoided a drop in yield or even reaped a rich harvest. But some communes and brigades under the same drought conditions simply waited for rain; when the rain did not come they had missed the proper agricultural season, and a considerable part of the spring sowing area was not sown at the right time, with summer sowing replacing spring sowing, so that the wheat did not get its greening water at the right time, and there were poor yields in the spring and fall. We absolutely must not repeat this lesson.

In many localities, because of the succession of drought years, water resources are inadequate, their reserves are exhausted, they have few material resources, and accordingly, they are suffering much hardship. But in the face of adversity they should think of their accomplishments and of the favorable circumstances. Since the party's third plenum, the various localities in our province have implemented the economic policy and pursued the agricultural production responsibility system with the result that the rural economy has been revivified, the peasants' livelihood has been improved, and the masses' production enthusiasm is on an upswing. The water conservancy facilities which have been built over many years in the various localities, especially small-sized systems, are also having an effect. All of these circumstances constitute the ideological conditions and the material basis for our work of resisting drought and assuring a good summer harvest and timely spring planting. So long as we exhibit the revolutionary spirit of remaking China like the stupid old man who moved the mountain, making thorough use of these favorable factors, and provided the cadres and the masses close ranks, wage an arduous struggle and diligently carry out a series of anti-drought measures, we will be able to manage our wheat fields effectively under the serious drought conditions and complete our spring planting tasks.

In the current anti-drought struggle, all of the localities must put into practice the spirit of the recent central committee work conference and mobilize the cadres and masses to a realization that conquering the drought and reaping a bumper harvest are critically important for the economic readjustment and for political stability. In addition, the following three specific anti-drought measures should be energetically pursued: first, "exploiting sources"; second, "regulating the flow"; third, improving the water conservancy management responsibility system. "Exploiting sources" means making full use of the benefits of existing water conservancy facilities and using their full potential. This requires that we thoroughly inspect irrigation areas and their associated motor-pumped wells, make a thorough survey of water source, and assure that none of the irrigated area is left empty. Motor-pumped wells that are not included in the irrigation system must immediately be incorporated into it, and wells in poor condition must immediately be repaired. In cases where the underground water level has dropped, such measures as placing the water pumps horizontally or replacing them with deep-well pumps should be used. In addition, such methods as multiwell irrigation, sending water to distant locations and moving water for low-lying areas to higher locations can be used to increase the irrigated area. In areas with insufficient water resources, the communes and brigades may discuss borrowing water and setting reasonable compensation. In localities where rivers and streams are flowing, everything possible must be done to store water. Localities which are able to do so may include slightly saline water in irrigation. "Regulating the flow" means using a variety of measures to regulate water use, such as preventing seepage from field ditches, leveling fields, using small-area ridge and ditch irrigation, and the like. Localities which are able to do so should also expand spray irrigation. Localities with insufficient water resources should use more "high yield ditches," "high yield holes" and "mini-fields" [anzi tian 2174 1311 3944] and make good preparations for point sowing as an anti-drought measure. We must support efforts to "exploit sources" and "regulate the flow" by using the water conservancy management responsibility system. In recent years, since the agricultural production responsibility system has come into universal use, some localities have not been able to keep pace in water use management, so that such problems as competition for water and waste of water have arisen. Accordingly, unified management of the motor-pumped wells by the brigade or production team should be stressed, the system of specific responsibility should be used, and well-by-well accounting instituted and collection methods improved. The irrigation responsibility system should also be practiced in irrigated areas. Rapidly overcoming a certain degree of disorder in local water use management will enable our limited water resources to produce the maximum benefit in the drought resistance work of sowing and watering the wheat.

The peak of the spring plowing season will soon be here. Leadership at all levels must rapidly go the front line of the anti-drought struggle, conscientiously survey and investigate, solve effectively any problems that have arisen and assure that sufficient work will be put into drought resistance and into guaranteeing timely spring sowing and a good summer harvest, so as to overcome the drought and win a victory in these efforts.

8480
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CARE OF WHEAT CROP STRESSED

Shijiazhuang HEBEI RIBAO in Chinese 19 Feb 81 p 1

/Article: "Give Steadfast Attention to Carrying Out a System of Responsibility to Combat Drought and Care for the Wheat to Win a Bumper Summer Harvest; Comrades in Charge at the Provincial Bureau of Agriculture Discuss Current Care of Wheat"/

/Text/ Recently comrades in positions of responsibility at the Provincial Bureau of Agriculture made some statements on how to triumph over the drought and do a good job of caring for the wheat during the spring season.

An officer in charge at the Provincial Bureau of Agriculture said: Soon the wheat will be turning green again. Making sure not to let the season slip by but doing a good job of springtime care of the wheat to win a bumper summer harvest holds extremely important significance for economic readjustment and political stability. Looking at the growth situation for wheat in Hebei Province, thanks to early planting last fall, the large amount of wheat planted at the right time, the rather sensible distribution of varieties, and the prompt care given most wheatfields, the situation in the wheatfields is everywhere better than last year, and mostly at the levels of the same period in 1979. Statistics from investigations conducted everywhere show that 27.84 million mu of wheat was planted this year, with category 1 seedlings occupying 38.4 percent of the wheatfield area, a 9.8 percent increase over last year. Category 2 seedlings cover 37.6 percent of the wheatfield area, which is about the same as last year. The category 3 seedling wheatfield area is 24 percent, 9.8 percent less than last year. In category 1, category 2, and category 3 wheatfields alike, the growth of colonies and individual plants is better than last year. In category 1 and category 2 wheat, tillering of individual plants has been greater than last year, and a relatively good foundation has already been laid for winning a bumper summer harvest. However, the dominant problem at the moment is the seriousness of the drought. Half of the wheatfields in the province have not received a watering from ice that had been frozen in the fields, and numerous wheatfields now evidence drought. The wheatfield area in the province lacking moisture now amounts to more than 15 million mu. According to weather forecasts, most areas will continue to have lower than normal rainfall between March and May this year. This poses a serious threat to winning a bumper summer harvest. Consequently, every leadership echelon and the broad masses of people must bear in mind the presently fairly good conditions of wheat seedlings, and also the disadvantageous factors occassioned by continued drought. They must face facts, take affective action, take care of the wheat in good time, use every manner of means to win a bumper summer grain harvest,and further consolidate and develop the very good situation in Hebei Province. A few thoughts on the issue of how to win a bumper summer harvest are given below.

1. Establish a mentality of combat against drought to win a bumper harvest. The daily deepening drought has become a serious threat to winning a bumper summer harvest. Nevertheless, there are still some cadres and members of the masses who harbor a mentality of paralysis and fears of difficulties. Therefore, every echelon of leadership must diligently do a good job of arousing mentalities to overcome paralysis and fear of difficulties. In addition, in combatting drought, caring for the wheat, and using water facilities, an assessment should be made and priorities established. Which fields can be watered and which ones are in the drought area must be ascertained, as well as where the situation stands in regard to the state of readiness and equipment at water conservation facilities including wells, ditches, and machines. Ways of solving problems must be put forward and gradually implemented. In drought areas where there is a shallow layer of water for wheatfields, the masses must be stirred to adapt measures to local situations to prepare some vacuum wells, "old man happy" /5071 7333 2867/, wide mouth wells, radiating wells, and such facilities to combat drought in a spirit of one more mu watered is one more mu, and one more tenth of a mu watered is one more tenth of a mu, striving to expand the wheatfield area that is watered. In order to resolve the conflict in the use of water for spring planting and for watering the wheat, in places where water resources are fairly good, every effort should be made during the favorable time prior to watering the wheat to water some empty fields so that neither spring sowing nor caring for the wheat will be missed.

2. Further strengthening and perfecting of the system of responsibility in agriculture, fully arousing the enthusiasm of the masses to combat drought and care for the wheat. At the present time, quite a large number of production teams in the province have yet to begin establishment of a system of responsibility for looking after the wheat. Some feel that there is not much care that a workforce can give a wheatfield; and some others feel a wheatfield is not amenable to dispersed harvesting and threshing, which makes for difficulties in calculating output, and consequently they are insufficiently active in implementing a system of responsibility for caring for the wheat. Some of those that have put in place a system of responsibility have relaxed leadership. Every jurisdiction must act with all possible speed to solve these problems. They must take advantage of the period of time before the very busy spring farming season begins to concentrate energies on implementing the Central Committee documents on a system of responsibility. Those who already have a system of responsibility should turn their attentions to consolidating and upgrading it, and those who have not yet established a system of responsibility should arouse the masses, carry on full discussion and begin to establish one. They may either link output to the calculation of remuneration, or they may do contracting of small segments of work, recording workpoints for fixed quotas. Contracting for production with households or contracting work with households is done principal in "three depends production teams," but here too leadership must be strengthened, timely solution made of existing problems, and firm action taken in accordance with the six articles set forth in the Central Committee documents. After a system of responsibility has been established, production brigade and production team cadres must both

diligently strengthen political ideology leadership and production leadership. There can be no "great letting go of the grip." In order to give greater impetus to combatting the drought through watering the wheat, no matter the form of a system of responsibility instituted, lands irrigated by machine wells and irrigation ditches must be under the unified control of production brigades and production teams, which should correspondingly establish systems of responsibility for irrigation management. In the management of machine wells, a system of responsibility of "several quotas" should be instituted with accounting done for each individual machine, and methods of rewards and penalties and levying of water fees on the basis of amount of time and quantity of water used should be put into effect. Places with above ground water irrigation should ready water allocation plans, setting fixed times, fixed amounts of water, and a fixed number of waterings per mu so that from limited water resources maximum irrigation benefits may be derived.

3. Adaptation of general methods to specific situations, and tailored care. Each jurisdiction should organize agricultural scientists and technicians in combination with the masses to conduct a single survey of wheat seedling moisture, and adapt general methods to specific situations to establish measures for caring for the wheat that are tailored to findings. Care of wheatfields that have been sown on time, have adequate water and fertilizer, and sturdy growth will consist mainly of controls. Multiple and careful hoeings in early spring, increasing warmth and maintaining moisture, and water and fertilizer management may be delayed until the high point of tillering has passed in the stage of early growth in order to control tillering, prevent excessively large colonies, promote root system growth, and increase the heading rate. Every jurisdiction must make such wheatfields their main focus of care, endeavoring to give them a high level of care for high output. For most wheatfields, helping things along will be dominant. In such wheatfields, growth of individual plants is weak and little tillering occurred before winter set in. As a result of this, plus lack of timely water and fertilizer management, in a fair number of cases, has made for a fairly poor moisture situation now. Some wheatfields have undergone loss of fertility and the yellowing of seedlings. After greening up has taken place, it will usually be necessary in such cases, to promptly catch up on hoeing and on management of water and fertilizer. But in those among them in which moisture conditions are good hoeing should be done while a layer of ice is still on the ground and top dressings of fertilizer should also be applied at that time. Irrigation may be suitably delayed to promote early greening up of the wheat seedlings, much tillering, and much heading. For wheatfields in drought areas, most important is strengthening of measures to preserve moisture. In early spring the wheat should be harrowed when ice is still on the ground, and there should be multiple and careful hoeings. Following rain or snow, moisture conditions should be capitalized on to apply a top dressing of fertilizer in an effort to improve the wheat seedlings. In addition to giving tailored care, it is also necessary to give attention to inspections for and control of rust and virus diseases, and to prevent livestock from gnawing at the rice seedlings.

4. In order to abbreviate the disaster period and make early arrangements for food to eat, in places where conditions permit, every effort should be made to plant more spring-sown early ripening crops. When sowing early maturing crops as a disaster relief measure, seriously stricken teams and hardship teams can have some "consumption grain fields," and "large contracting of work." Bearded barley is an industrial raw materials, which every effort should be made to plant more of.

5. Earnest strengthening of leadership to manage the wheatfields. This year's task of combatting drought and looking after the wheat is extremely arduous. The broad masses of cadres and people should fully understand the seriousness of the present drought, overcome their "year of rest" mentality, make good arrangements for household sideline industries and diversification, assure that the front line of agricultural production has sufficient manpower, and waste no time in promoting a high tide of combat against drought and caring for the wheat. All echelons should conscientiously strengthen concrete leadership to investigate and understand existing problems with wheat seedlings, moisture in wheatfields, water conservancy facilities, irrigation capabilities, a system of responsibility for production and care of wheat in disaster areas. They should propose actions to combat drought and look after the wheat, and vigorously implement them. Full advantage should be taken of farm science institutes and farm technology promotion stations, organizing them to perform experiments pertaining to techniques for caring for wheat, and for demonstrations and promotional work. Last year more than 4,400 agricultural technical cadres visited more than 3000 sites for protracted periods, and they will continue to do so this year. They will visit sites and look after areas, giving technical demonstrations.

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HEBEI

SYSTEM OF RESPONSIBILITY FOR WHEAT GROWING IN SHIJIAZHUANG

Shijiazhuang HEBEI RIBAO in Chinese 16 Feb 81 p 1

/Article by Ma Zhenchun /7456 2182 2504/ and Zhang Xinmin /1728 2450 3046/, Hebei People's Broadcasting Station, and Yu Aifeng /0060 1947 7685/, Correspondent: "System of Responsibility Linking Calculation of Remuneration to Production of Wheat Put Into Effect in Shijiazhuang Prefecture. Strengthen Leadership; Criticize Left Deviation; Lead Through Representative Examples; Depend on the Masses. More Than 14,000 Production Teams in the Prefecture Numbering More Than 50 Percent of the Total Number of Production Teams Have Instituted the System"/

/Text/ All counties, communes, and production brigades in Shijiazhuang Prefecture have turned attention to the promotion and implementation of a system of responsibility linking calculation of remuneration to production of wheat was a key measure for winning a bumper harvest in agriculture for the year as a whole. They have begun with criticism of left deviation ideology and the purging of pernicious influences, have unified perception echelon by echelon, and have cleared away obstacles. They have summarized representative experiences, and led cadres and commune members to formulate forms of a system of responsibility suited to realities in local production teams, greatly increasing the level of care of the wheat this year. The situation of the wheat seedlings is universally better than in previous years. Throughout the prefecture at the present time, more than 14,000 production teams, or more than 50 percent of all production teams, have instituted a system of responsibility linking calculation of remuneration to production. Though this system has not been in effect for very long, extremely striking results have already appeared. One has been careful preparation of the fields, sufficient base fertilizer, and adequate numbers of sturdy seedlings. Second has been prompt inspection and replacement of seedlings as needed, planting fully and properly. Third has been a good job of protecting and looking after the wheat. A recent survey shows the area of category 1 and 2 wheatfields to be 4.08 million mu, which is 84 percent of the wheatfield area, 730,000 mu more than during the bumper harvest year of 1978.

Last year saw an 850 million jin reduction over the year before in wheat output throughout the prefecture. In the more than 900 production teams that last year promoted a system of responsibility linking calculation of remuneration to output, given the same climatic conditions, output in these teams was remarkably higher than in surrounding production teams that did not link remuneration to output. Some production teams had outputs more than 20 percent higher than in bumper harvest years to create the highest levels on record. They summarized the lessons of this experience, and before planting wheat last fall, the Prefecture CCP Committee and administrative offices of the government explicitly designated the promotion and institution of a system of responsibility linking remuneration to output as the key measure for winning a bumper harvest in agriculture during 1981, requiring that attention be given it early, and well, and that attention be given its implementation. This issue was several times reiterated in meetings of County CCP Committee secretaries, and a special meeting of directors of county rural work departments was convened to study concrete actions to be taken. In the process of relaying and putting into effect the Central Committee document on strengthening and perfecting systems of responsibility for agricultural production, in particular, each county placed on the agenda of the County CCP Committee promotion of a system of responsibility linking remuneration to the production of wheat as a component in consolidating the development of systems of responsibility for production. County and commune leaders personally concentrated on the work of selected units, criticized leftist deviation, purged lingering perniciousness, and summarized the lessons of experience. Xinle County zeroed in on the thinking prevalent among grassroots cadres in not wanting to be bothered, not wanting to act, and being accustomed to eating out of a "large common pot." They convened a meeting of cadres from three echelons [production teams, production brigades, and communes], organized grassroots level cadres in the study of the Central Committee documents, and used the method of comparing representatives examples to unify perception. The number of production teams in the county promoting a system of responsibility linking production of wheat to remuneration increased from last year's 17 to more than 1200. Of the 265,000 mu of wheat grown in the county, inspection and replacement of seedlings was done on 170,000 mu; zuopo disease [0976 0980 4016] was eliminated from 120,000 mu; a top dressing of fertilizer was given to 90,000 mu of weak seedlings; 70,000 mu was hoed, and the entire area was watered with freezing water. The wheat seedlings are growing evenly and sturdily.

In the process of promoting and putting into effect a system of responsibility linking remuneration to wheat output in Shijiazhuang Prefecture, the way was shown through widespread use of representative examples and reliance on the masses to solve difficult problems. The Prefecture CCP Committee and government administrative organizations summarized and printed for distribution the representative experiences of 1980 in instituting a system of responsibility linking remuneration to wheat output, which won a bumper harvest. Every county and commune used representative examples from their own county and commune in discussions, appraisals, and comparisons by cadres and commune members. Cadres and commune members suggested ways and means, putting forward numerous suggestions and methods. They stressed study to solve specific methods for harvesting, threshing, and calculating output, which may be summarized in the following four categories. One was production team unified control over and use of threshing machines with each household harvesting and threshing in turn according to a fixed sequence. Second was that in production teams lacking threshers, each household would spread harvested grain in separate parts of the threshing floor for general removal of husks with rollers. The third was estimating output at the edge of the fields, followed by collective harvesting and threshing, calculation of output per household and proportions being adjusted upward or downward. Fourth was production team organization of a special team for the threshing ground, and numerical sequencing of households to have their grain threshed. In addition, difficult problems concerning the fixing of quotas, fertilizing and watering were also satisfactorily solved through mass discussion.

Now all the production teams in the prefecture that have instituted a system of responsibility linking remuneration to output of wheat are now in process of consolidating, completing and improving it. In production teams that have not yet put such a system into effect, county and commune leaders have personally interceded to help implement, with all possible speed, a system of responsibility linking renumeration to wheat output. In places where cadres and commune members do not want to have a system of responsibility linking remuneration to output, the wishes of the cadres and the mass of commune members have been respected. Instead a system of responsibility of management in "a single coordinated process," or contracting for small segments of work with remuneration figured on the basis of fixed quotas has been instituted rather than use of a single method for all situations.

9432
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WHEAT GROWING IN HENGSHUI PREFECTURE ANALYZED

Shijiazhuang HEBEI RIBAO in Chinese 13 Feb 81 p 1

[Article: "Developing Wheat Management Measures To Deal With the Main Contradictions of Lack of Water and Fertilizer"]

[Text] Recently the Hengshui Prefecture Scientific and Technical Committee convened 25 agronomists, assistant agronomists and other scientific and technical personnel from 19 agricultural, meteorological, scientific research and other units belonging to the prefecture and to Fucheng, Wuyi, Anping and other counties to analyze this year's wheat growth and to discuss early spring management measures. The comrades participating in the meeting concluded that in view of the condition of seedlings in several counties, this year's wheat growth situation is close to or better than that of a normal year. Class 1 and class 2 wheat fields are 20-30 percent more numerous than last year at this time; the basic number of seedlings and the number of stalks of class 1 wheat are 10,000-20,000 and 100,000-150,000 larger respectively than at the same time last year. The number of tillers and secondary roots is also larger than last year. The amount of wheat sown at the proper time is 12.6 percent greater than last year, and the growth period of pre-winter wheat has been longer than last year. The number of wheat fields to which a top dress of phosphate fertilizer has been scientifically applied is greater, and favorable conditions for early spring growth of the wheat have been created in these fields. One unfavorable condition is insufficient base fertilizer. With the exception of phosphate fertilizer, last year's application of all wheat fertilizers, including crude, chemical and fine fertilizers, was in smaller quantities than in the previous year, and the area to which the fertilizer was applied was down more than 20 percent from the previous year. Second, the soil moisture is insufficient, and the soil moisture situation for early field wheat is even worse, with the moisture content standing at only 6 to 10 percent.

To deal with the main wheat contradictions of a serious shortage of water and fertilizer, the scientific and technical personnel proposed early top dressing, suitable early watering, and early cultivation as early-period management measures. First an energetic effort must be made in early spring top dressing. Early field wheat especially requires top dressing at the greening up period when soil moisture is relatively plentiful, so as to make the fullest use of the fertilizer. In the case of weak and yellow sprouts which were planted early, which have suffered from high air temperatures, have consumed large amounts of nutrients, underwent rapid growth before winter, ran out of fertilizer after the turn of the year and became weakened, the main aim should be to increase tillering and earing, and so an early top dress should be applied. At the same time, Fuchen's experience in increasing yields by applying a top dress of mixed nitrogen and phosphate fertilizer during the greening period should be widely tested experimentally.

In the case of vigorous seedlings, the main technique is heavy applications of growth fertilizer to maintaining large tillers, keep a good number of intermediate tillers and increase the effective tillering rate so as to increase earing on the tillers. The next important matter is early spring watering. The watering time should be based on the specific situation, including the weather conditions, soil moisture, soil quality, seedling condition, and nature of top dressing. The early spring watering is generally done at greening and the beginning of growth, generally in the middle or last third of March. But this watering is best done at a time when the soil temperature is stable at 5 degrees. The early spring watering must also be done on the basis of various circumstances. But care must be taken to do the watering at a warm period in the spring and to stop watering when the weather turns cold, and the water should all be absorbed by the soil on the day of watering, because water accumulation on top of the soil can lead to freezing damage. The third important point is early cultivation of the wheat. Harrowing and hoeing the wheat when the ground is still frozen in early spring is an effective way of loosening the soil, so that it absorbs more sunlight and the ground temperature rises and of adjusting soil moisture. Accordingly, harrowing while the ground is frozen should be done early; one should not wait until after greening. Hoeing is particularly important for dry land and saline wheat fields, and it is even more important to do this hoeing early. Hoeing of a saline field not only may result in dispersion of moisture and a rise in temperature, but also can prevent salinity. To assure good quality of hoeing work, the depth should be greater than 1 cun. The previous hoeing practice of only breaking the surface layer of the ground and cutting a few marks should be overcome, and an effort should be made to hoe shallowly first, and then hoe once again more deeply.

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HEBEI

EVALUATION OF REFORMS IN PLANTING SYSTEM REPORTED

Shijiazhuang HEBEI RIBAO in Chinese 27 Feb, 1, 2 Mar 81

[Article by Li Bin [2621 2430], Lu Yongqing [7120 3057 1987], Wang Fengwen [3769 7685 2429]: "On Our Province's Experience, Lessons and Ideas of Reforming the Planting System"]

[27 Feb 81 p 2]

[Text] After founding of the nation, our province's production relationships changed, production conditions continuously improved, the level of techniques of cultivation continued to improve and the planting system correspondingly changed. Great achievements have been realized. At the same time, some problems also emerged. We will present our humble views on the several problems that our province has encountered in reforming the planting system.

I. A brief description of the reform of the planting system since founding of the nation; a general review of the past 31 years shows the following four stages of development:

The first stage: This is the period from the founding of the nation to the end of the movement to establish cooperatives. During this stage, our province's agricultural production developed from an individual small-scale peasant economy to cooperatives via mutual assistance units and elementary communes. Production conditions improved. The planting system developed gradually from one cropping a year to three croppings in 2 years. In 1949, the sowing area of summer food grain crops throughout the provinces was over 24 million mu. The multiple index of food grain crops was 123 percent. In 1956, the area of summer food grain crops developed to 31 million mu. The multiple index increased to 134 percent. During this stage, the changes in the planting system were relatively stable, basically measures were suited to local circumstances, therefore, the unit yields and total yield of summer food grain crops, autumn food grain crops and the whole year's food grain crops throughout the province all increased. The yields of cotton and oil bearing crops also increased on a large scale.

The second stage: This was the period from 1958 to the beginning of the 1960's. Blindness emerged in crop distribution. It was mainly an over development of the areas of potato and paddy rice plants. In 1958, the area of potatoes reached 20.75 million mu, a sudden increase of nearly twofold over the previous year. The area of paddy rice also increased nearly onefold over the previous year, reaching

3.36 million mu. Production of food grains was uneven and the yields dropped. At the beginning of the 1960's, the area of potatoes had to be reduced to about 10 million mu. The area of paddy rice also dropped to about 1 million mu. By 1963, the area of summer food grains was 26.22 million mu, the multiple index of fields of food grain crops was 124 percent, back to the level of 1953. The areas of cotton and oil bearing crops also dropped.

The third stage: This was from the latter part of the 1960's to the middle period of the 1970's. During this stage, our province's planting system underwent the greatest change. Outstanding manifestation was the sudden increase in the area of summer food grain crops and the rapid expansion of the multiple planting index of fields of food grain crops. Double cropping a year and triple cropping in two years covered most of the area. Great changes also occurred in the planting method and the form of planting. In 1966, sowing of summer food grain crops covered 30.03 million mu. In 1976, this increased to 45.64 million mu, an increase of 52 percent. In the 8 localities and 2 cities of the major wheat producing regions throughout the nation, the area of summer food grain crops already constituted 75.4 percent of the total area of food grain crops. If the 10 to 15 percent of "auxiliary fields" were added, the actual sowing area of summer food grain crops was approximately over 50 million mu. During this stage, changes in the conditions of water and fertilizers were great. The unit yield and total yield of food grain crops increased. In 1966, per mu yield of food grain crops was 256.2 jin. Total yield was 21.89 billion jin. In 1976, the per mu yield of food grains was 335.9 jin, the total yield was 29.6 billion jin. The total yield increased by 35.2 percent. But the yields of cotton and oil bearing crops dropped. The total yield of cotton dropped by 27.2 percent. The total yield of oil bearing crops dropped by 26.2 percent. During this stage, economic crops, cotton and oil bearing crops, were pushed out as a result of unilateral emphasis on "taking food grains as the key link."

The fourth stage: This is the period from 1977 up to the present. Based on the spirit of suiting measures to local circumstances, developing the advantages and avoiding the shortcomings, and developing the superiorities, the distribution of crops was adjusted so that the planting system could develop towards a more rational direction. This was mainly done by appropriately lessening the area of summer food grain crops. In the planting method in the north, the "funing type" small strip fields were popularized in the wheat regions, and the experience of realizing two plantings and two harvests by preserving the autumn crop and increasing a summer crop was gained. In the central and southern parts, the "two dense and one sparse" method was popularized and the experience of companion planting of two crops by the 4-8 against the mound or 3-7 against the mount planting method was gained. At the same time, measures were suited to local circumstances to couple the plantings with repeated cropping by flat seeding, to plant two food grain crops and one green manure crop and two food grain crops and one bean crop. At some places in the Heilonggang Region, the planting of two food grain crops and one green manure crop and rotation of food grain crops and green manure crops were popularized. The area of three plantings and three harvests of interplanting food grain crops and cotton was greatly reduced. The sowing area of such economic crops as cotton and oil bearing crops was firmly established and production underwent new development. In 1980, serious drought and many natural disasters occurred. The yield of summer food grain crops dropped but bumper harvests were still realized by the autumn food grain crops. Total yield approached the highest level of the past. But the yields of cotton and oil bearing crops realized record breaking bumper harvests. Per mu yield of cotton and total yield of oil bearing crops both surpassed the highest historical levels.

II. The experience and lessons of reforming the planting system in our province. The outstanding experience was:

1. As the productive conditions of water, fertilizers and soil continued to improve, measures were suited to local circumstances to increase rationally the sowing area of summer food grain crops. Expanding the multiple planting index is an important way to increase the yield of food grains. From 1949 to 1974, the area of summer food grain crops has continually increased and the unit yield has gradually increased. The total yield of summer food grain crops rose year after year. The total yield of summer food grain crops as a percentage of the annual yield of food grain crops also increased correspondingly. The total yields of autumn food grain crops and the year's total yield of food grain crops also increased. In 1949, the area of summer food grain crops throughout the province was 24.32 million mu, constituting 27.5 percent of the area of food grain crops. The multiple index of food grain crops was 123 percent. Per mu yield was 74.1 jin, total yield was 1.8 billion jin. The total annual yield of food grain crops was 9.39 billion jin. Summer food grain crops constituted 19.2 percent of the total yield of food grain crops. In 1974, the sowing area of summer food grain crops was 43.47 million mu, constituting 55.2 percent of the area of food grain crops. The multiple index of food grain crops reached 153.4 percent. Per mu yield of summer food grain crops increased to 193.3 jin. Total yield was 8.4 billion jin. The annual total yield of food grain crops reached 31.37 billion jin. The yield of summer food grain crops constituted 26.8 percent of the total annual yield of food grain crops.

2. Suiting measures to local circumstances and using rational planting methods are effective measures to assure increased production in the current year and over many years. The weather conditions of the southern and northern parts of our province are very different. The productive conditions of each locality are also visibly different. The amount of heat in the northern winter wheat producing regions cannot satisfy the demands of cumulative temperatures for multiple planting of two crops, therefore different arrangements must be made in the planting method. Our province's broad masses of farmers have summarized through production practice the successful experience of realizing bumper harvests of summer food grains and autumn food grains by companion planting in wheatfields. It has been rapidly popularized at all localities. For example, the method of planting in small strip fields of the "funing method" practiced in the northern part, the planting methods of "two dense and one sparse," "three dense and one sparse," strip fields of 7.5 chi, two food grain crops and one bean crop have all been relatively successful. Interplanting and mixed planting of food grain crops popularized in regions of one cropping a year have also served definitely to increase the yield of food grains.

3. Planting and nurturing the land and continuously improving soil fertility are reliable assurances of realizing continued increases in production. There are

three ways to bank fertilizers and soil fertility: One is to actively develop raising of hogs and other domesticate livestock. Another is to expand accumulation of fertilizers and the amount of application of fertilizers. A third one is to return stalks to the fields in a big way to plant and nurture the land. Viewing the present conditions, the first two are also limited by the need for food grains, feed and fuel and they cannot be changed drastically right now. The third way which is to develop green manure and beans that are soil nurturing crops is a feasible measure to nurture soil fertility at present. There is already some successful experience. According to a survey of Nanpi County, fields planted with a rotation of food grain crops and green manure crops or companion planted with green manure turned under for a year contained 14 to 18 percent more nitrogen than before they were turned under. The content of phosphorus increased 11 to 25 percent, the content of organic matter in the soil increased 12 to 14 percent. In fields continuously turned under for 2 years, the amount of total nitrogen in the soil increased 20 to 40 percent, the phosphorous content increased 30 to 80 percent, and the soil's organic matter increased 15 to 20 percent.

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The major lessons of reforming our province's planting system were:

1. The understanding of the guideline of "taking food grains as the key link, overall development" was not sufficiently complete. Our province is a province with a shortage of food grains. Grasping food grain production forcefully is correct. But, our province is also an important region producing cotton and oil bearing crops. They cannot be neglected. Because of the influence of the "leftist" ideology, some localities went against the proper order and carried out "one shot deals," "blind commands," unilaterally emphasized food grains and neglected the development of such economic crops as cotton and oil bearing crops, causing unfavorable results. Our province's highest total yield of cotton in the past was in 1957. The area of cotton planting covered 14.03 million mu. Total yield was 500.97 million jin. The highest per mu yield in history was in 1970. The area of cotton plantations throughout the province was 8.71 million mu, average per mu yield was 58 jin. But during the 4 years from 1976 to 1979, the unit area yield of cotton remained at between 24 and 28 jin. Total yield of cotton was only 196.94 million to 234 million jin. The highest total yield of oil bearing crops was in 1955. The sowing area was 5,656,000 mu. Per mu yield was 143.2 jin, total yield was 804.09 million jin. In 1977, only 4.04 million mu were sown. Per mu yield was 76 jin, total yield was only 309.21 million jin. The yields of cotton and oil bearing crops dropped, income of the farmers dropped, causing "high yielding poor brigades," and this also affected the production of food grain crops.

2. Emphasis is on summer with neglect of autumn and inappropriate expansion of summer plantings. Our province's food grain production has always been mainly autumn food grains. From the beginning of the founding of the nation to 1974, the yield of autumn food grains had always constituted about 80 percent of the total yield of annual food grains. But since 1973, summer crops were emphasized and autumn crops were commonly neglected. In autumn food grain production to autumn crops, there were less fertilizers, and management was relaxed. Under the guidance of emphasizing summer and neglecting autumn, the area of summer food

grain crops expanded again and again. The area of summer food grain crops as a percentage of the total area of food grain crops increased from about 30 percent in the 1960's to over 40 percent at the beginning of the 1970's. In 1976, it reached 58.9 percent. In the central and southern parts, the area of summer food grain crops in wheat regions as a percentage of the total area of food grain crops reached 73 to 100 percent. Calculating the actual sowing area, generally the area of summer food grain crops actually surpassed the statistics by 10 to 15 percent. The actual area of summer food grain crops in key wheat producing regions constituted over 80 percent of the area of food grain crops. Because of inappropriate expansion of the area of wheatfields, the following unfavorable effects were caused:

First, the yield of summer food grain crops was affected. Although the per mu yield of summer grain crops of our province has increased a lot from that at the beginning of the founding of the nation, but it is still not high, not stable and not balanced. Since founding of the nation, there have been 12 years in which the per mu yield was less than 100 jin; 15 years in which the per mu yield was between 100 and 200 jin. There were only 4 years in which the yield was between 200 and 300 jin. One of the reasons that the per mu yield of summer food crops is not high is a shortage of water sources, and there is a lot of dryland wheat. During the entire growth period of wheat in our province's wheat producing regions, the natural amount of rainfall is generally only 131.4 to 179 mm, satisfying only 30 percent of the need. High yields of wheat can be assured only by timely irrigation. Our province has about 10 million mu of dryland wheat each year. Dryland wheat depends entirely on the weather. There is no assurance that plantings will produce any harvest and harvests are small. The second reason is that the area of late-crop wheat is large and the proportion of timely wheat is small. Because of the increase in the area of summer food grain crops, the area of summer sown autumn food grain crops has increased correspondingly. Even though companion planting measures have been used, there are still a fairly large portion of autumn food grain crops that mature late each year, crop opening cannot be realized in time, preventing the wheatfields from being sown in time. According to statistics, there are always about 4 million mu of late-cropping wheat each year. In minimal years, there are 1 to 2 million mu. The most was in 1973 when it reached over 8 million mu. Late-cropping wheat is third grade wheat. Because the cumulative temperature of the previous year is insufficient, the roots are few, the tillers are few, a lot of seedlings die during wintering, the yields are low. Because the area of late wheat is large, the proportion of timely wheat has reduced. If we calculate on the basis of the most timely sowing period on a 10-day period, in ordinary years, the most timely area of wheat is only about 50 percent of the total. Of the winter wheat sown in autumn in 1979, the most timely wheat crops cover only 44 percent of the area of wheatfields. The third is because the area of summer food grains is large, the use of water and fertilizers is scattered, management, harvesting and threshing are not performed in time, creating loss.

Second, the yield of autumn food grain crops is affected. Because of the increase in the area of summer food grain crops, the area of spring sown autumn food grain crops lessens. Summer sown corn generally yields one-third less than spring sown corn. According to our province's present yield of spring corn, each reduction of one mu of spring corn and an increas of one mu of summer corn mean a reduced harvest of food grains of 100 to 150 jin. If we expand the area of summer food grain crops by 10 million mu, we will reduce the harvest of food grain crops by 1 to 1.5 billion jin. The per mu yield of expanded dryland wheatfields is only 100 to 150 jin. At the same time, because of insufficient emphasis on autumn food grain crops, untimely planting, poor management, delay of the maturation period, the yield is not only affected but the planting of wheat is also affected, creating a phenomenon of "increases in summer and reductions in autumn."

3. Among the autumn food grain crops, emphasis is mainly on autumn crops and the other crops are neglected, thus affecting even increases in yield. That which stands out is the rapid development of the major autumn crop, corn, while the areas of millet, sorghum and beans have been overly compressed. From the beginning of the founding of the nation to the 1960's, the area of corn was only 20 million mu, constituting 20 percent of the area of autumn food grain crops. In recent years, as the area of wheat expanded, the area of summer sown corn has rapidly developed. In 1977, it constituted 41 percent of the area of autumn food grain crops, in 1980, it constituted 50.7 percent of the area of autumn food grain crops, while the area of millet at the beginning period of the founding of the nation continuously dropped from 25 million mu, constituting about 30 percent of the area of autumn food grain crops, to 7.54 million mu in 1980, constituting 10.5 percent of the area of autumn food grain crops, and the sowing area of beans at the beginning period of the founding of the nation remained at 8 to 9 million mu, reaching a high of 12.2 million mu in 1957, constituting 14.8 percent of the area of autumn food grain crops, but this later dropped to a sowing area of 2.8 million mu in 1980, constituting 3.9 percent of the area of autumn food grain crops. Because corn is a hydrophilous crop that needs fertilizers, an overly large sowing area causes difficulty in satisfying its demands for water and fertilizers, and it is difficult to increase the yield by a large scale. Especially in years of severe floods or drought, serious reduction in yield will occur. At the same time, the sowing area of millet is reduced, unfavorable to regulation of food grain rations and also causing a shortage of feed and grass for large livestock, affecting overall development. Over compression of the area of beans affects the supply of bean products and crop rotation and reverse cropping, planting and nurturing of the land. In addition, in the Dawa area in Heilonggang, there has always been the custom of planting sorghum. At the beginning period of founding of the nation, the area of sorghum reached over 13 million mu, but by 1980, only 5.85 million mu were left.

4. Improper popularization of triple plantings and triple harvests and some "high yielding crops." Interplanting and companion planting of food grain crops and food grain crops in the triple plantings and triple harvests method are technical measures to increase yield at some places where there are more people and less land and where the productive conditions are good. But, blind expansion of such plantings over large areas without considering objective conditions is not appropriate. Our province began to engage in triple plantings and triple harvests at the end of the 1960's, by 1972, the area had developed to 1.47 million mu, and in later years this increased year after year. In 1977, this had expanded again to over 14 million mu. Because the localities of our province could not satisfy the demands of triple plantings and triple harvests for water and fertilizer conditions, the third crop often could not be sown in time, and during the late period, it suffered from low temperature and cold damage, and harvests

were not assured. At the same time, maturation at an improper moment affected sowing of wheat. In addition, blind expansion of certain "high-yielding crops" without regard to the conditions also brought about major problems in agricultural production. For example, in 1958, potato crops were blindly expanded, in 1974, too much emphasis was placed on expanding the planting of hybrid sorghum, in 1975, the Bashang region popularized dark wheat over large areas, etc. All of these affected the balanced increases in yield of food grain crops.

5. Emphasis on use and neglect of nurturing the land caused a deficiency in land fertility. Because the area of wheat in our province has continued to expand, the multiple planting index has risen year by year. Land fertility was exploited but nurturing of the land was insufficient and fertility of the land dropped. According to statistics, during the past 10 years, the amount of application of farmhouse manure has always remained at 4 to 5 cards per mu and the quality is very low. Because the soil's fertility has dropped, maintaining a high yield must rely on massive increases in the application of chemical fertilizers. This not only increases cost but also leads to "reduced rewards" from fertilizers.

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III. Ideas on Reforming our Province's Planting System Well

Reform of the planting system must be based on the future but with a tight grasp of the present and must follow the principles of suiting measures to local circumstances, developing the advantages and avoiding the shortcomings, and developing the local superiority to realize taking food grains as the key link, overall development, to ceaselessly create increases in yield in summer, in autumn, throughout the year, continuous increases year after year, and high yields at low cost. The actual idea is illustrated in the following points:

1. Rationally distribute food grains, cotton and oil bearing crops and gradually realize regional planting. Our province is a province with a food grain shortage. During the 28 years from 1953 to 1980, except in 1970, 1974, 1975, and 1979 when there was a small surplus, there were shortages. Our province is also an important cotton and oil bearing crop producing region, and the supply of commercial products must be assured. Therefore, in the distribution of crops, food grain production must first be considered. Using food grain crops to force out cotton and oil bearing crops is not right. Using cotton and oil bearing crops to force out food grains is not right either. Cotton and oil production must be arranged on the basis of arranging well food grain production. At present, the sowing area of food grain crops throughout the province should remain in relative stability. It should not be overly compressed and it should generally be kept at the level of the sowing area of 1980. On this basis, major efforts should be exerted to increase unit yields, increase total yield, and realize self sufficiency and surplus of food grains. One way is to continue to grasp well the regions of food grain crops in the plains at the foot of the mountains on both sides of the Jing-Guang Railroad and Jing-Shan Railroad. This region includes 52 counties and cities in the six regions of Tang, Lang, Bao, Shi, Xin, Han, with 32 million mu of cultivated land. The water and fertilizer conditions are good, the level of scientific planting is high, unit area yield is high. In 1975, the yield of food grains (representative of an ordinary year) of this region constituted 40.9

percent of the total yield of food grains of the entire province. The region provided 1.56 billion jin of commercial food grains, constituting 52 percent of the commercial food grains of the entire province. In the future, this should be continuously grasped well to increase the commodity rate. The second way is to grasp well the production of food grains of the Heilonggang River Valley region. The Heilonggang River Valley includes the entire regions of Changzhou and Hengshui and part of Handan, Xintai, Langfang totaling 46 counties and cities. The cultivated area was 34 million mu. Of this, the area of food grain crops was 25.4 million mu, constituting one-third of the area of food grain crops of the entire province. The major characteristics of this region are: more land and less people, aridity, infertile land, salinity, alkalinity and a poor level of production. In recent years, water sources have been developed and the land has been planted and nurtured. The conditions have changed to a great extent, the irrigated area has reached over 20 million mu. The yields have continuously risen. The average per mu yield is over 300 jin, total yield is over 8 billion jin. The region provides 470 million jin of commercial food grains, constituting about 15.7 percent of the entire province's commercial food grains. In the future, water sources must be continuously developed, drainage of waterlogged conditions must be grasped well, the land must be leveled, fertilizers and land fertility must be banked, crop distribution must be done well, then the yield of food grains will increase by a large scale. This region is our province's important food grains producing region in the future. It should be grasped well to continue to increase the commodity rate. Although the two localities of Zhang and Cheng are situated north of the Great Wall in the cold border regions, there are more land and less people. The commodity rate of food grains is higher and this must be conscientiously grasped well. To further grasp well the production of food grains and to increase the proportion of the rate of commodities, commodity food grain bases must be established according to plan, in stages and in batches so that our province's production of food grains can have a new development.

The distribution of cotton must be based on stabilization of the area, appropriate concentration, increasing the unit yield and the commodity rate. At present, the distribution of our province's cotton is already centralized in most regions but there are still some regions in which cotton is not centralized. For this, the old cotton regions in central and southern Hebei should be continuously firmly established and improved. Some of the cottonfields in the north should be preserved and the scattered cottonfields should be appropriately centralized to assure the commodity rate of cotton.

Oil bearing crops are one of our province's major economic crops. In ordinary years, the sowing area is over 4 million mu. In recent years, the area has been revived and developed. In 1980, the sowing area was 6.37 million mu, approaching the highest sowing area of the past. The sowing area of peanuts should be stabilized in the future. Efforts should be exerted mainly to increase unit yield and increase total yield. Linseed is mostly concentrated in the counties of Bashang. After test planting, it has performed well in Baxia and the central and the south central part. The area of test planting should be expanded. Sesame is planted at all localities in the north and in the south central part. The area is not large. The development of sunflower during the last 1 or 2 years has been rapid. Especially in the saline and alkaline soil of the Heilonggang region, it has a visible superiority of increased yield and it can be further developed. The area of rapeseed has lessened in recent years. It should be planted as a companion crop of the main crop of spring sown food grain. After harvesting the rapeseeds, the roots should be turned under and the fields tilled to seize the crop opening to plant "er lu gu," this increases the yield of oil bearing crops and benefits nurturing of the land.

2. Distribute food grain crops well and increase summer yields, autumn yields and the yield of the entire year. The heart of the distribution of food grain crops is rational distribution of summer food grain crops. Many years of experience show in the distribution of summer food grain crops, the locality's weather and economic factors must be taken into consideration. Weather factors include conscientious consideration of the length of the frostless period of the locality, light and heat resources and rainfall. Economic factors mainly include considerations of conditions of irrigation, soil fertility, level of fertilization and labor forces, animal forces, and degree of mechanization. Neglecting objective conditions and blindly expanding the area of summer food grain crops will bring about increases in summer but decreases in autumn, affecting the increase in total yield of food grains of the entire year. At present, the area of irrigated wheatfields of the entire province is from 30 to 35 million mu. Adding this to the 2 million mu of dryland wheatfields of the large lowlands of one crop of wheat and one crop of green manure in the Heilonggang region and part of the wheatfields sown by utilizing the moisture of the land, the area of summer food grain crops in our province should be about 37 to 40 million mu. Except for the two localities of Zhang and Cheng, the area of summer food grain crops as a percentage of the total area of food grain crops in the remaining localities and cities should be: in Tangshan City and the Tangshan area, it should be 40 percnet; in Shijiazhuang City and area, it should be above 85 percent; in the other regions it should generally be 60 to 70 percent. In the future, as conditions of water and fertilizers change, the area of wheat in Heilonggang and the western mountain regions where there is less wheat can be appropriately increased.

The increase or decrease in the yield of autumn food grain crops determines the amount of total yield of food grains of the entire province. A comparison of the yields of food grains of the first year and the last year of every 2-year period since the founding of the nation showed that there were 10 years of increased yields of summer food grain crops, autumn food grain crops and the entire year; there were 5 years of decreased yields of summer food crops, autumn food grain crops and those over the entire year; there were 8 years of increased yields of summer food grain crops, decreased yields of autumn food grain crops, and decreased yields of the entire year; there were 7 years of decreases in summer food grain crops, increases in autumn food grain crops and increases in the yield of the entire year. The above facts show the following, i.e., there are summer increases, autumn increases and whole year increases; summer decreases, autumn decreases and decreases of the entire year; summer increases and autumn decreases causing a reduction of total annual yield, and summer decreases and autumn increases causing an increase in total annual yield. Therefore, any kind of method and ideology emphasizing summer and neglecting autumn crops is wrong.

In autumn food grain crops, rational coupling of the crops must also be taken into consideration. Corn is our province's major autumn food grain crop. In recent years, its area has developed rapidly. It has served importantly in promoting the production of autumn food grains. In 1980, the entire province sowed a total of 35 million mu of corn, constituting one-half of the area of autumn food grain crops, an increase of 85 percent over that at the beginning period of the founding of the nation. Corn was planted at many places that were not suitable for planting corn. Therefore, the sowing area of corn should be 40 to 45 percent of the area of autumn food grain crops. Sorghum is characterized by tolerance to drought, waterlogging, salinity and alkalinity. It is suitable for planting in the Heilongjiang region and the lowlands of the northern mountain regions of our province. It produces a relatively stable and high yield. Its stalks can be used to develop weaving and be used as building materials. Its sowing area should not be reduced further. It should constitute about 10 percent of the area of autumn food grain crops. Potatoes are stable and high yielding food grain crops. In ordinary years, their sowing area constitutes about 10 percent of the area of autumn food grain crops. In the future, this percentage should be maintained. Millet once occupied an important position in our province's food grain production. But in recent years, because of the emphasis on high-yield crops, the sowing area gradually lessened. In 1980, only 8.1 million mu were sown with millet, constituting 11 percent of the area of autumn food grain crops. The area of millet has been overly reduced. This is unfavorable to solving the problems of food for people and feed for horses and overall development. Some advanced model efforts have proven that millet itself is not a low-yield crop. The conditions for developing summer millet production in the central and southern regions are good and it should be developed. Its area should not be reduced further. Soybean is a crop with a high content of protein and fat. It is also favorable to nurturing fertility of the land. In recent years, its area has been reduced and reduced again. In 1980, its sowing area was 3.87 million mu. As interplanting and companion planting techniques of tall stemmed crops of corn and bean crops are popularized, using bean crops as the crops to bank fertilizers and fertility of the land and including them in the reform of the planting system for rotation planting and reverse cropping, interplanting and companion planting will greatly increase the sowing area of beans. If all corn and sorghum crops can be interplanted with soybean in a 4 to 2 ratio or another format, the sowing area of soybean throughout the province can develop to about 10 million mu.

3. Plant and nurture the land to continuously increase the soil's fertility. Increasing the application of fertilizers and nurturing the fertility of the land involves nothing more than developing livestock and accumulating manure, returning stalks to the fields, making compost and methane and developing green manure in a big way. From practical productive experience, developing hog-raising and raising of livestock in a big way are limited by the availability of feed and resources. In the short term, it is difficult to develop them in a big way. Returning stalks to the fields is limited by the problems of fuel and feed grasses. Doing this in a big way cannot be realized within a short period of 3 or 5 years. Developing methane is a good way to solve the problems of energy source and fertilizers in farm villages and it should be rapidly popularized. But at present, it cannot be depended upon to solve the problem of organic fertilizer sources. But developing green manure is an effective measure to nurture the land at present and much can be done. In recent years, the production of green manure in our province has developed. In 1977, there were over 2 million mu, in 1978 there were 3.3 million mu, in 1979, the area surpassed 4 million mu. But this still cannot meet the demand of quickly solving the problem of planting and nurturing

the land. Development of green manure should be grasped and developed with conscientious efforts.

The planting of green manure should be included in the reform of the planting system and it should be planted as a crop in the rotation system. For example: (1) In parts of the arid and infertile low alkaline land of the Heilonggang area, one crop of wheat and one crop of green manure can be planted in rotation. The main crop can be wheat, after wheat is harvested, sesbania, mung beans or black soya beans can be sown. Green manure can be turned under about 1 month before planting wheat, or in early spring, sweet clover can be sown in icy conditions on ridges in wheatfields. After harvesting the wheat, sweet clover will continue to grow and can be turned under before planting wheat. (2) In the Bashang region, a 3-year rotation system of food grain crops, oil bearing crops and green manure can be used. Food grain crops are sown in the 1st year. Linseed mixed with sweet clover can be planted in the 2nd year. Sweet clover can grow in the 3rd year. After autumn, the grazing grasses on the ground can be harvested as feed for domesticated livestock and the roots and stubbles can be turned under as green manure to nurture the land. (3) In the plains, interplanting of food grain crops and green manure can be developed. One method is to change the third crop of food grain crops to green manure crop (sesbania or mung bean) on the foundation of triple plantings and triple harvests of the original 7.5 chi strip fields. The green manure is turned under about 1 month before planting wheat. The masses call this two food grain crops and one manure crop. At some places, one to two rows of mung beans are planted after harvesting of wheat on the foundations of two plantings and two harvests of companion planted food grain crops in the present 5 chi small strip fields, thus changing the planting format into two food grain crops and one bean crop or two food grain crops and one green manure crop. (4) At some places, pea or rapeseed is planted in a line on the empty backs of ridges of wheatfields. After harvesting wheat, sesbania is planted, thus becoming a format of two food grain crops and two green manure crops. (5) Utilization of a crop for both food and fertilizer is realized by using bean crops interplanted with other tall stemmed food grain crops.

4. Rational arrangement of the planting method and the planting format. The planting method and the planting format can only develop their maximum economic gain when they are suited to the natural conditions and the productive conditions of the locality. Different conditions require different planting methods and planting formats.

(1) The Gashang region is 1,400 to 1,700 meters above sea level. Annual rainfall is 300 to 400 mm. The frostless period lasts 90 to 110 days. Cumulative temperature above 0° C is 2800° C. The planting system is one cropping a year. Historically, planting is not fine here, and attention should be paid to doing well the work of rotation of agricultural crops, popularizing resting the field in rotation and turning under of green manure. The major planting systems are spring wheat--naked oats--linseed--resting the field and turning green manure under; potato--naked oats--broom corn millet--resting the field and turning green manure under; potato--spring wheat--linseed--turning green manure under; spring wheat--mixed sown barley and pea--linseed--turning green manure under.

(2) Yanshan, Taihangshan region, hilly regions, including the southern and northern parts of Yanshan and the wide region east of Taihangshan have an annual

average temperature of 6-13° C, the active cumulative temperature is 3400-4800° C, the frostless period lasts from 140 to 220 days. Rainfall is 550 to 700 mm. Because of the topography, the soil texture varies greatly and the planting systems are more complex. In the northern Hebei mountain regions, the planting system is one cropping a year. In the southern section of Taihangshan it is two croppings a year or three croppings in 2 years. Many years of practice prove that popularizing ridged fields and strip planting, planting in small fields, trenched fields, planting on large and small ridges, planting by dibbling the fields of terrace fields in mountain regions and hilly regions are important measures to realize increased yields of food grains.

(3) The plain of the southern foothill of Yanshan and the irrigated region of Pingchuan in northern Hebei have an annual frostless period of from 150 to 180 days. The active cumulative temperature is 3500 to 4200° C. Rain is more abundant. Day and night time temperature differences are greater, favorable to the growth of spring sown autumn food grains. The planting system should be mainly triple cropping in 2 years. Communes and brigades that have good water and fertilizer conditions can engage in double cropping a year. The planting method should mainly be companion planting on ridges of wheatfields. Efforts should be exerted to popularize the "funing type" 4.5 chi to 5 chi small strip field planting format that is suitable to the conditions of the locality. A small area of flat-seeded double crops can be coupled with the above. Attention must be paid to using early maturing and high yielding varieties and the sowing time must be seized.

(4) Central and southern plains of Hebei are the plains of Bao, Shi, Xin, Han regions along the Jing-Guang Railroad. The amount of heat is rich, the active cumulative temperature is 3700-5100° C. The frostless period lasts 180 to 210 days. The planting system is mostly double cropping a year. The planting method generally should be mainly companion planting of double crops, appropriately coupled with a part of flat sown repeated cropping. Some communes and brigades with good water and fertilizer conditions, a high degree of mechanization and more labor force can consider flat sown double cropping as the main method coupled partly with companion planted double plantings and double harvests or small areas of triple plantings and triple harvests.

(5) The Heilonggang region has poorer productive conditions. The method combining the use and nurturing of the land should be actively used. The planting method of two food grain crops and one green manure crop or two food grain crops and one bean crop should be popularized. Where lowlands are expansive and villages are few, one food grain crop and one green manure crop planted in rotation can be implemented. At places where fertilizer and water conditions are good, companion planted double cropping or flat sown double cropping can be implemented.

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HEBEI

LIVESTOCK INDUSTRY EXPANDED IN CHENGDE PREFECTURE

Shijiazhuang HEBEI RIBAO in Chinese 12 Feb 81 p 1

[Article: "Cattle and Sheep Production Greatly Expanded in Chengde Prefecture"]

[Text] In the past 2 years, because Chengde Prefecture has conscientiously put the spirit of the third party plenum into practice, has implemented the two documents on developing agriculture and has energetically rooted our leftist tendencies, livestock raising throughout the area has entered a new stage of rapid development, and cattle and sheep production has achieved excellent results unprecedented in the last decade. As of the end of last year, the number of cattle on hand was 346,600 head, up 2.5 percent from the preceding year, while the number of sheep on hand was 1,573,000, up 14.1 percent from the preceding year, the largest increase since 1966. The flourishing historical prospect of "cattle and sheep all over the land" is beginning to become a reality outside the great wall, and the peasants are all happily praising the third plenum's policy.

After the third plenum was held, the leadership at all levels in Chengde Prefecture conscientiously summed up the lessons of past experience and came to the profound realization that "if livestock raising is to be greatly expanded, the key measure is to eliminate leftist efforts." Accordingly, the prefecture's party committee and administrative office jointly practiced the third plenum's spirit and implemented the two documents on developing agriculture. Leftist errors were criticized under its aegis on several occasions. In addition, four specific steps were taken. 1. By criticizing leftist deviations, liberating ideology and relaxing policy, individual livestock raising by commune members was greatly expanded. They clearly specified that there would not be any limitations on variety or numbers, and provided great support in regard to funds, sources of livestock, disease prevention, and techniques. 2. They reorganized the internal structure of agriculture. By following the principle of accentuating strong points, avoiding weak points and bringing favorable circumstances into play, and on the basis of thorough surveys and investigations, the entire area was changed over from the past policy of an exclusive focus on grains to equal development of forestry, grains and livestock raising. 3. The focal points of development within the livestock industry were redefined. A change was made from the past situation of concentrating on pig raising to a concentration on the raising of the grass-eating animals, i.e. cattle, sheep and rabbits. 4. A production responsibility system was implemented in such forms as costs and profits will break even in 3 years, "production teams with households raising livestock, several fixes and one reward" and the use of specialized households and specialized personnel. Seventy percent of the prefecture's brigades have implemented the livestock raising responsibility system and have vigorously mobilized the cadres and commune members' enthusiasm for livestock raising. According to statistics, last year the number of sheep and cattle being raised showed a large increase over the previous year in all of the prefecture's 10 counties and municipalities. Fengning County implemented the policy of "one person, one sheep," and six communes having more than 10,000 sheep emerged. Because the policy was well implemented and household livestock raising by commune members increased rapidly, by the end of last year the total number of household-raised large livestock in the prefecture was up 3.5 times over the previous year, with the number of household cattle up 9 times and the number of household-raised sheep up 2.4 times, the best figures since cooperativization.

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CSO: 4007/305

HEBEI

AFFORESTATION OF PLAIN ANALYZED

Shijiazhuang HEBEI RIBAO in Chinese 6 Mar 81 p 2

[Article by Liu Yamin [0491 0068 3046] and Han Pengnian [7281 6265 1628]: "Problems and Thoughts on the Greening of the Plain"]

[Text] The greening of a plain is very broad in scope, including a farmland forest network, the greening of the four besides [beside villages, roads, waterways, and fields], and intercropping of farms and forests, and strip forests. Hebei Province has seen rapid development in recent years in the greening of the plain. As of the end of 1979, 26 of the 94 plain counties (or municipalities) in the province had substantially completed farmland forest networks with a farmland forest network area amounting to 31.19 million mu. Trees planted in the four besides number 1.6 billion. Intercropping of agricultural crops and tong trees has been done on 590,000 mu, and intercropping of grain and date trees has been done on 690,000 mu. There is also gradual development toward a comprehensive forest shelter system combining strips, networks, and tracts of forests. But for numerous reasons, forest belts have not been planted around large amounts of farmland, and large amounts of vacant land beside villages and beside houses has not been put to fullest use. This both impairs effectiveness of the shelter that the trees provide, and results in lack of use of the major bases for the production of timber. Some places have planted trees, but the fully grown forests produced from them do not produce useful timber, and thus fail in their anticipated usefulness. On the basis of the large amount of investigation we did, apart from the policy problems involved in the greening of the plains, mostly the following problems of a technical nature exist:

1. Single species of trees and irrational blending. As a result of the shortage of seedlings during the past several years, plus the lack of experience, many places have tree species of a single kind. Tree species used in afforestation are mostly daguan poplars [1129 1351 2799], Beijing poplars [0554 0079 2799], and elms. The homogeneity of tree species has brought bad consequences in its wake, including large outbreaks of diseases and insect pests that seriously impair rapid tree growth and quality of timber. Some places ignored the principle of matching trees to the area, and planted large numbers of poplars on both banks of river channels suited to the growing of locusts, with the result that they did not grow well or became "small old trees" of fully grown forests producing no useful timber.

2. Excessively dense afforestation, which seriously impairs rapid tree growth. As a result of the advocacy during the past several years of a "program" of 100 trees per person, great efforts have been made in the planting of dense forests, and everywhere exists a situation of excessively close plantings. In many places tree growth has been feeble as a result of excessively close afforestation; differentiation has been serious, forests are very uneven in appearance; tree trunks bow outward on both sides, and large outbreaks of diseases and insect pests have occurred, which both impair the rapid formation of the trees into timber, and impair the quality of timber.

3. Lack of scientific care and allowing natural growth. Trees and farm crops are the same in that they both require timely watering, loosening of the soil, pruning and tending, and control of diseases and insect pests in order to grow quickly and produce to provide numerous benefits. But many places have emphasized planting but slighted care, and did not give different kinds of trees the kinds of care they needed. Though some might prune, they frequently pruned too much producing "small heads," seriously impairing the healthy growth of the trees. Some places used the "plucking the big hair" method of thinning, removing the best trees and keeping the inferior ones, giving rise to irregularity of the mature forests. Some disease and insect infestations were serious and could not be promptly brought under control, which impaired the normal growth and maturation of the trees, or even caused the destruction of young trees for a waste of all previous efforts.

4. Small number of superior variety seedlings in a seeking after only quantity while ignoring quality. Some places gave insufficient attention to fine varieties and sturdy seedlings. There was no lack of quantity of seedlings grown, but varieties were not suitable. They used stereotyped methods year after year, and nothing much came out of the nurseries. Diseases and insect pest infestations were serious producing "little old seedlings," and when such seedlings were used in afforestation, the survival rate was low, growth was weak, and frequently no forests could be seen as a result of afforestation efforts, mature forests had little useable timber.

5. Lack of unified planning with forest networks becoming systems of their own. Some places revamped their planning every year in the course of capital construction of agriculture, changing the roads and "moving" the trees several times along with them. After many years the trees had still not become timber, and the masses were unable to derive any real benefits. At some brigades, the farmland forest networks became a system of their own resulting in the roads and ditches of neighboring brigades no longer being interlinked. Forest belts were not linked together and standards were not high, impairing full play of their effectiveness in sheltering.

In order to do a good job in the greening up of the plain in Hebei Province so that it will develop further toward high standards, the following suggestions are made in consideration of currently existing problems:

1. Selection and matching of tree varieties with adjustment of general principles to local conditions. Fairly long growth cycles for trees and how good the selection of tree varieties bears on the success or failure of afforestation efforts. As a result of many years experience, several tree varieties merit vigorous development.

Such a variety is the Chinese white poplar, which grows fast, produces good quality timber, lives long, is sturdy, has relatively few diseases and insect pests, and is a superior native tree variety for the greening of the plain. It does well in most parts of Hebei province except in the very cold northern parts and in seriously saline-alkaline areas.

During the past several years, between 200 and 300 varieties of hydrid poplars have been introduced into Hebei Province from other places. As a result of practical tests, some hybrid poplars have shown themselves to grow rapidly, have broad adaptability and are capable of maturing within several years if given a little intensive care. The European and American poplars and the Shalan /phonetic/ poplar are of this kind. Tree varieties used in farmland forest networks must be suitably mingled with consideration for present benefits and long term results. Generally, in major forest belts, Chinese white poplar should predominate. Secondary forest belts with tractor-plowed roads should have mostly fast growing tree varieties. In the creation of major and secondary forest belts, there should be a suitable mix of some oriental arborvitae, weeping willows, and shrub varieties, both to increase the effectiveness of protection and to beautify the environment, gradually effecting a parklike atmosphere over a wide area. Soil, climate, and water conditions differ from place to place. Maximum diversification should be done to meet differing needs for timber and to prevent the spread of diseases and insect pests. Trees brought in from elsewhere must undergo testing, and not be blindly promoted.

2. Determination of a sensible density to promote fast growth and production. A large quantity of material derived from our investigations shows that when individual trees are spaced at 2 meter intervals, they will produce purlins; spaced at 4 meters, they will grow into fine timbers. A double row of trees in which the rows are spaced 1 meter or more apart and in which individual trees are spaced from 3 to 4 meters from each other will produce purlins; spaced at from 6 to 8 meters, they will produce fine timbers. Trees now growing that have been too densely planted will require thinning and tending. Each jurisdiction should act in accordance with the intended use of timber and local circumstances. In the process of thinning, the fine trees should be kept while the inferior ones are removed, and "plucking of large hairs" strictly prevented. Sturdy saplings removed through thinning may be planted along the same roads or used to green up some other place. When using such saplings to fill in blank spaces, every effort should be made to select trees to maintain an even height with no planting of small saplings beneath large trees. Large seedlings removed in the thinning process should, if they have not grown well or are seriously disease ridden or insect infected, be used to make small pieces of lumber rather than be transplanted.

3. Intensification of scientific care of trees. In addition to timely watering and the prevention and control of diseases, tree care should include pruning that leaves as many small side branches as possible, and that does not affect the crown of the trees so that the trees can continue photosynthesis and grow rapidly. Pruning should not remove more than one-third of the growth, much less result in "small heads."

4. Establishment of superior varieties breeding bases to propagate sturdy seedlings of superior varieties. There is need to change the situation of seeking quantity alone without concern for economic benefits, and there should be vigorous development of superior local tree species, while at the same time introducing superior varieties from elsewhere. Trees used in the greening of roadsides and the sides of water channels should, insofar as possible, be large saplings that are 2 years old or older. Following planting, they should be looked after, and they will be able to rapidly mature. Accompanying the development of the greening of cities and the countryside should be suitable development of evergreen tree species in order to fill the need to affect a parklike atmosphere over wide areas.

5. Overall planning with consideration of all factors, and doing a good job of unified planning. Basic responsibility for greening of the plain should rest with counties with the formulation of a unified plan that combines farming, forestry, and water concerns. It should be founded in the zoning of agriculture, meet actual local needs, adapt general methods to local situations, and aim at preventing harmful occurrences. Planning must be done in accordance with local realities, exploit strengths and avoid weaknesses, suit trees to locales, take into account results, and guard against "single methods for every situation." Gradual building of a system in which farmland forest networks are paramount into comprehensive shelter forest systems that combine belts, networks, and tracts will bring about greater comprehensive benefits.

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RAT EXTERMINATION CAMPAIGN WAGED IN ZANHUANG COUNTY

Shijiazhuang HEBEI RIBAO in Chinese 3 Mar 81 p 2

[Article by province crop pest survey station: "Wage a Unified, Synchronized Rat Extermination Campaign"]

[Text] In the last 2 years, damage by rats and mice has become serious in Zanhuang County: of 220,000 mu of grain land in the country, 155,000 mu suffered damage by rats, with 48,000 mu suffering serious damage. Some 5,800 mu suffered damage of 30 percent or more, and the crop was ruined on 300 mu. The greatest damage was suffered by spring corn and peanuts, followed by Chinese yams, millet, beans and vegetables. In addition, rats and mice steal grain in houses, pollute the environment, and chew through clothing, bedding, kitchen utensils, boxes and furniture, thus doing serious harm.

In order to end the harm done by rats, the Zanhuang County leadership organs summarized the masses' rate extermination experience and mobilized the masses for county-wide unified rate extermination action. Last August the country concentrated its forces for a war of extermination against rats. Their main methods were as follows: 1. The country, commune and brigade levels set up rat extermination leadership groups. At the county level the vice chairman of the country revolutionary committee was in command, with responsible persons from the peasant associations, the propaganda department, the agricultural office, the health office, the public security office and the office of foodstuffs participating. The propaganda department was in charge of propagandizing the masses and mobilizing them extensively; the agricultural department was in charge of technical guidance and of assuring high-quality preparation of the poison and strict oversight of its application; the public health department was in charge of safe use of the pesticides and of rescue work; the food department was in charge of supplying the bait; the public security department was in charge of maintaining order and preventing bad persons from taking the opportunity to make trouble. The commune and brigade rat extermination leadership groups each had a responsible person participating in them, and agricultural technical personnel, health personnel and storekeepers were involved. 2. The rate extermination propaganda was well carried out. Wire broadcast systems, blackboard newspapers, mimeograph materials and the like were used to propagandize the importance of rat extermination, protection and control measures, the main points to be given attention and the like, so that everyone was fully informed about the activities. 3. Technical propaganda was done well. In order to master the technique for mixing the poison and setting it out, the country and commune levels jointly trained more than 250 cadres and technical personnel to assure that the technical measures would be carried out. 4. Rat population surveys were carried out effectively. In order to have full knowledge of the situation, before the bait was set out, the communes and brigades carried out a general survey so that the rate population was known in great detail, helping to concentrate the bait in the most important locations and to concentrate the extermination effect. 5. On the basis of occurrences of rat damage the county prepared a total of 2,600 jin of zinc phosphide rat poison and a sufficient quantity of bait.

In the rat extermination activities that came under their cognizance, the county leadership organs stressed unified preparation of the bai; regardless of whether the rat poison was purchased by the commune or brigades or by the production teams themselves, all of it was turned over to the brigades for centralized preparation of the poisoned bait, after which it was distributed to the production teams for use. The bait was primarily wheat and corn, of which rats are fond. The mixing proportions were 5-7 jin of zinc phosphide per hundred jin of bait. When possible a small quantity of cooking oil or oily material such as fish or shrimp was added to increase its attraction for rats. The setting out of the bait was synchronized. After the bait was prepared, the brigades determined the time at which it would be set out, and set it out all at once. It was set out in households after the evening meal and was the responsibility of the individual households. Two or three piles of bait were put out in each household. Before the bait was set out all grains and foodstuffs were carefully sealed, making it impossible for the rats to find any other food and forcing them to eat the poisoned bait. Setting out of the bait in the agricultural fields was under the leadership of the production team heads, who organized special teams, generally consisting of 5 or 6 persons each, to set out the bait near rat holes and places frequented by the rats. The bait was set out at night and collected in the early morning. It was set out 2 or 3 times. While the bait was out, household poultry and livestock were carefully controlled so as to avoid accidental poisoning. In order to prevent secondary poisoning and environmental pollution, the dead rats were collected and disposed of centrally. All of the units designated reward procedures to mobilize the masses' the enthusiasm for collecting the dead rats. The reward set by Tiancun and Duhu Brigades was 0.2-0.5 yuan per dead rat. Jianshou, Yankang and Yuding brigades gave 1 or 2 work points per dead rat. According to incomplete statistics for 19 communes in the province, a total of about 250,000 rats were killed; calculating that one rat spoils 18 jin of grain per year, this campaign recovered 4.5 million jin of grain which would have been lost.

To control rat damage thoroughly, this county plans to hold another unified rat extermination campaign before the spring sowing when the rats begin to be active in the fields, so as to hold rat numbers at levels where they cannot do harm.

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CSO: 4007/305

HEBEI

BRIEFS

ANTI-DROUGHT MEASURES--The broad masses of cadres and commune members in drought-stricken Zhangjiakou Prefecture have concentrated their forces for a successful effort in anti-drought measures in assuring that the spring sowing is carried out. By 20 February, more than 550,000 mu of land had already had anti-drought measures implemented, and the various other activities in preparation for plowing were gradually proceeding. Zhuangjiakou has had little precipitation since last winter, and at present more than 60 percent of the total arable land lacks or has inadequate soil moisture. Since the beginning of spring the prefecture's party committee and administrative office have organized cadres at the prefecture, county and commune level to go down to the basic-level units and stress anti-drought, soil moisture protection measures: 1. good maintenance of motor-pumped wells in the irrigation systems; 2. rolling to preserve soil moisture and use of livestock and machinery together to speed the pace of soil compacting; 3. thorough use of the potential of existing water conservancy facilities to irrigate more land; and 4. good seed selection and regulation of seed exchanges. [Text] [Shijiazhuang HEBEI RIBAO in Chinese 1 May 81 p 1] 8480

POWER INDUSTRY FIGHTS DROUGHT--The staff and workers of the province-run electric power front are doing everything possible to generate and supply more electric power and are actively supporting rural anti-drought measures. According to statistics from the prefectures of Langfang, Chuangzhou, Zhangjiakou, Xingtai and Shijiazhuang, this January the amount of power supplied to the countryside for irrigation and drainage was more than 10 million kilowatt-hours greater than in the same period last year. In order to meet rural needs for electricity to fight the drought, the personnel of the province-run power stations have taken care in inspecting, maintaining and adjusting their equipment, and any problems that arise are immediatley resolved so that the units are constantly in safe, economical, full-power, stable operating condition. On 6 February, during their inspection rounds workers as the Xingtai generating station's steam turbine shop found that a gear on axle 2 of unit No 2 was seriously worn, threatening operating safety. They gave up their spring vacation and worked around the clock for 3 days to eliminate the defect, assuring safe power production. This January, with fuel in insufficient supply, the various province-run power stations overfulfilled their production plan by 12.6 percent, producing more than 88 million kilowatt-hours above plan. Departments at all levels in the province's power production front have made the provision of electricity for rural irrigation and drainage an essential objective and have striven to provide more power. They have stepped up their management and maintenance of transmission and transformer equipment and lines everywhere so as to prevent problems from occurring. On 1 February there was a burnout of a bypass line at support No 26 of the 3,500 watt Yuanshi-Zanhuang transmission line, which if not immediately repaired could have caused a blackout over most of Zanhuang County. The linemen of the Shijiazhuang electric power office immediately went to the scene and installed a new bypass line, thus assuring reliability of the electric supply. [Text] [Shijiazhuang HEBEI RIBAO in Chinese 23 Feb 81 p 1] 8480

JIN COUNTY INCREASED PEAR SALES--Jin County, where pear production is concentrated in Hebei Province, made full use of the role of each of its production teams. After fulfilling state commercial and foreign trade requisition purchase quotas, production teams themselves promoted the sale at negotiated prices of the remainder. They also enlarged the quantity stored in cellars to lengthen the marketing period for pears. Last year the county increased its income by 1.74 million yuan. Last year they changed their method of dealing solely with state businesses. After satisfying state requisition purchase quotas, each production team was allowed to offer for sale at negotiated prices the remaining portion. Magu, Chengguan, and Tianshui communes, where pear production is concentrated, set up fruit trade warehouses, which were responsible for selling, signing contracts, organizing packing and transportation for the production teams. Each production team also adopted methods such as direct contacts with external businesses and external trade departments, sending people and writing letters to form links with national organizations external to the province and with plant and mining enterprises, arousing individuals to push barrows or carry poles hawking wares, and having the production team set up stalls to make sales in cities and towns. Last year the county's own efforts sold 34.14 million jin of pears. It pared expenses for intermediate commercial links by more than 400,000 yuan. In order to increase income and to ease the conflict between supply and sales in markets during the fruit season, every commune and brigade in Jin County increased its storage capacity, thereby lengthening the storage period. Last year, 23 underground and semiunderground cellars were constructed, and 7.5 million jin of pears were stored. As of December 1980, 6.1 million jin had been sold. In accordance with state price regulations, each jin of pears sold for 0.12 yuan more than when it first came off the tree for a total increase in income of 733,000 yuan. /Text/ /Shijiazhuang HEBEI RIBAO in Chinese 18 Feb 81 p 1/ 9432

RECORD OIL-BEARING CROP HARVEST--Yesterday provincial authorities concerned told correspondents that Hebei Province's 1980 output of oil-bearing crops totaled 903 million jin, a 260 million jin increase over last year's 643 million jin for a 40.4 percent increase. It was the highest single year's output of oil-bearing crops in Hebei Province since the founding of the People's Republic, and an increase of 99 million jin over the 804 million jin harvest of 1955, the highest previous year on record, for a 12.3 percent increase. Throughout the province, tremendous increases in output took place in all prefectures and municipalities with the exception of the two prefectures of Zhangjiakou, and Chengde, and Shijiazhuang municipality, which had decreased outputs as the result of a serious natural disaster and reduction in acreage. /Text/ /Shijiazhuang HEBEI RIBAO in Chinese 8 Mar 81 p 1/ 9432

EFFECTIVE AFFORESTATION IN CHONGLI--Each of the communes and brigades in Chongli County has instituted systems of responsibility for production using specialized contracting, have organized special forestry teams, and have adhered to year after year afforestation, gaining striking accomplishments in forestry output. During the past 3 years, they have completed afforestation of 87,000 mu, and the forest preserve area amounts to 63,000 mu, equivalent to 60 percent of the total area afforested in the 27 years since the founding of the Republic. Chongli County began to set up a special forestry team in 1977, instituted specialized contracting, and a system of responsibility linking remuneration to output. They established afforestation norms, as well as labor use and quality norms based on the degree of difficulty of work done by the special teams, and their distance away. Month by month, forestry technicians conducted inspections of work done. Within the special teams was instituted a system of "five quotas and one reward" and "three fixeds and one inspection," namely fixed number of personnel, fixed attendance at work, fixed quantity, fixed quality, fixed remuneration, and rewards for overfulfillment of quotas; guaranteed preparation of the soil; guaranteed planting of trees, guaranteed survival, with rewards for meeting requirements and penalties for failure to meet requirements. Institution of a system of responsibility in afforestation using special contracting has solved the past conflict among farming, and forestry for manpower during the busy seasons. It has closely linked the individual benefits of commune members with the building of the collective, and it has increased the speed and quality of afforestation. In 1980, the county completed preparation of soil for afforestation on 78,180 mu to exceed its 60,000 mu quota by 30 percent. /Text/ /Shijaizhuang HEBEI RIBAO in Chinese 16 Feb 81 p 1/ 9432

CSO: 4007/313

BRIEFS

TOBACCO PRODUCTION--Nineteen tobacco-producing counties in Hubei had finished transplanting 200,000 mu of tobacco by the end of April, 54,000 mu more than last year. [Wuhan Hubei Provincial Service in Mandarin 1100 GMT 13 May 81 OW]

CSO: 4007/396

NINGXIA

ELECTRONIC MAINTENANCE OF FRUIT AND VEGETABLE FRESHNESS REPORTED

Yinchuan NINGXIA RIBAO in Chinese 4 Mar 81 p 2

[Article by Yi Lin [4135 2651]: "Ningxia Succeeds With Electronic Preservation of Freshness in Vegetables and Fruits"]

[Text] After many years of research and experimentation, Ningxia Province has successfully used electronics to maintain the freshness of vegetables and fruits.

Just before the lunar New Year, the Yinchuan Municipal Suburban Commune and Brigade Enterprises Bureau held an exhibit of electronic preservation devices, in which a piece of freshness preserving equipment and some tomatoes and hot peppers whose freshness has been electronically preserved were displayed. Ningxia University's electric teaching center showed television pictures of stored vegetables and fruits whose freshness had been preserved electronically. From the exhibits and the television, people were able to see that following electronic preservation of freshness, vegetables and fruits such as hot peppers, tomatoes, eggplant, cucumbers, and apples were neither rotten nor dried up, and their color was still vivid after having been kept at room temperatures for from 2 to 3 months, while those fruits and vegetables that had not had their freshness electronically preserved rotted and spoiled within a short period of time in normal temperatures.

Electronic maintenance of freshness entails use of high frequency radiation and the ozone it produces to treat fruits and vegetables for a certain amount of time in hermetically sealed conditions in order to lower their respiratory functions and prolong their life processes, while at the same time killing various forms of bacteria in their environment, thereby attaining the goal of maintaining freshness in storage at normal temperatures for a long period of time. This has been the result of many years research and experimentation on the part of Xu Zhengming [1776 2973 2404], engineer at the electronic teaching center of Ningxia University and Liu Qinghe [0491 3237 0735], lecturer in chemistry at the university. Xu Zhengming had earlier studied biology, later taking up electronics. In 1960, while studying the effects of high frequencies on organisms, he tried unsuccessfully to solve the problem of electronic preservation of freshness. Since 1976, they have done repeated experiments to find the key to electronic preservation of freshness, finally succeeding in their experiments. Between the winter of 1977 and the spring of 1978, they used high frequency ozone to treat chicken eggs, tomatoes, hot peppers, and cucumbers, which still maintained their freshness after 3 months time. In 1979, the national Ministry of Education allotted them 10,000 yuan as experimentation expenses. They conducted concentrated experiments for a year, successfully enlarging the variety of fruits and vegetables whose freshness they were able to preserve. Results were best in preserving the freshness of cucumbers, tomatoes, and hot peppers. Chicken eggs preserved for half a year were still fresh. In 1980, they again developed an electronic freshness preserving device. Now not only have the electronic teaching center of Ningxi University and the radio plant test manufactured electronic freshness preservation equipment, but plants subordinate to the Yinchuan Municipal Suburban Commune and Brigade Enterprises Bureau have also test manufactured electronic freshness preservation devices with the help of the Ningxia University electronic teaching center.

As the people's standard of living rises, the quantities of vegetables and vegetables needed will gradually increase, but vegetables and fruits are seasonal and cannot be kept for a long time. The electronic freshness preservation devices that have been successfully experimented with in Ningxia Province preserve freshness well; the equipment is not complicated; and costs are not high. Not only can the state and collectives use them in the storage of vegetables, fruits and some non-staple foods, but small devices may be used in homes to preserve freshness.

In order to put them to practical use in the shortest time possible, scientists, technicians, and workers concerned are now doing further research experiments on the problem of electronic preservation of freshness to develop different models of equipment, and to authenticate the scientific data and methods of using them to preserve freshness, so that electronic preservation of freshness will gradually find broad applications, and so that the broad masses of people will be able to eat during cold seasons vegetables and fruits whose freshness has been preserved.

9432
CSO: 4007/316

NINGXIA

CONTROL OF INSECTS IN STORED GRAIN REPORTED

Yinchuang NINGXIA RIBAO in Chinese 2 Mar 81 p 1

[Article by Zhang Huaixin [1728 2037 0207] "Need to Intensify Prevention and Control of Insect Pests in Stored Grain Throughout the Region"]

[Text] During the last half of 1980, the Ningxia Autonomous Region Grain Institute ran a fairly large scale survey of insect pests in stored grain in national grain depots, grain stations, grain and oil processing plants, state farm, rural commune and brigade warehouses, and in commercial, supply and marketing and foreign trade units. The survey showed that there are 53 different kinds of insect pests in grain stored throughout the region, and they are found not only in state grain depots and state farms, but also in rural commune and brigade depots, in the homes of commune members, and in the residences of urbanites. Kinds of insects are more numerous in plains areas than in mountain areas, and the damage they cause is also more serious than in mountain areas. The kinds of insects found in stored grain in Ningxia is currently on the increase; insect pests are continuing to spread, seriously threatening the safety of stored grain. There are five reasons for the increase in insect pests in stored grain. One is the existence of insect pests in warehouses (or houses) themselves. Second is transmittal into our region in grain from elsewhere. Third is bugs in the grain supplied by communes and brigades. Fourth is transmittal in containers (burlap bags,cotton bags, etc.). Fifth is transmittal in processed grain of bugs from grain processing plants. In addition, technical control forces in our region are weak. The "four withouts" campaign for grain storage was not conducted with sufficient vigor, and methods of technical prevention are insufficiently energetic.

Most serious damage is done to stored grain by weevils such as corn weevils, lesser grain borers, pea weevils, and gelechiid moths, which are able to hollow out the kernels of grain. Destructive insect pests also cause extremely great damage. Examples include hongban pinang [4767 2432 4122 0926], and he pinang [5964 4122 0926], which not only masticate the grain, but also turn it into crumbs, thereby robbing it of any value as food. Some insect pests carry bacteria, which infect grain, and can impair human health if ingested. Reproductive abilities of insect pests in stored grain are also quite strong. Corn weevils, for example, are able to reproduce four generations a year in Ningxia Autonomous Region. Each mature female insect produces 200 eggs, and if half are male and half female eggs, by the fourth generation, more than 2 million insects will be reproduced. Still other insects found in stored grain have strong tolerance of cold and hunger. Some can continue to exist at below zero degrees Celsius, and some can go without eating for 8 years without dying. Consequently, research coupled with economically effective scientific storage methods, the elimination of insects, molds, rats, sparrows, and pollution to reduce grain losses, is a current urgent task in the storage of grain in the Ningxia Autonomous Region.

In order to do a good job of preventing and controlling insect pests in stored grain, eradicating insect pests as early as possible, and insuring the safety of stored grain, the Ningxia Region Grain Institute suggests that the following things should now be done.

1. The temperature at which insects in stored grain reproduce is generally above 15°C. In plains areas, insect reproduction and growth times are at the end of April and at the end of October. In mountain areas it is in mid-May and early October (when temperatures are suitable in winter-stored grain, insect pests may also reproduce. This is now the spring season when temperatures are rising and suitable for insect reproduction. Grain units and communes and brigades everywhere must intensify control to prevent outbreaks of insects. 2. Implementation of systems of hygiene and sanitation, the disinfection of warehouses, and spraying of insect prevention lines, all conducted in close combination, with the major objective being prevention. Prevention is better than control. 3. Making sure to check on grain quality and doing quarantine work, bolstering the system for checking grain, strictly preventing quarantined items and dangerous insects from entering Ningxia, with eradication being done upon discovery to prevent their spread. 4. Burlap bags carrying insects must be treated before being filled with grain. Burlap bags containing no insects must also not be filled with grain until after they have been shaken out and cleaned up. After grain for storage has been readied, an anti-insect strip should be sprayed all around it, and grain headed for storage should not be allowed out of warehouses until after insect pests have been eliminated from it. 5. It is proposed that businesses, supply and marketing, and foreign trade units should also do prevention work against insect pests in warehouses for foodstuffs, medicinal materials, and local livestock products to avoid spreading insects from one place to another. 6. Rural communes and brigades must adapt general practices to local situation to do a good job of prevention and control of insects in grain warehouses. They should give attention at all times to cleanliness and hygiene in warehouses, promptly get rid of garbage, and drain away dirty water. Before accepting new grain into warehouses, warehouses should be cleaned and disinfected. Infested grain should also not be allowed to leave warehouses. 7. Henceforth, once every 3 to 5 years, a survey of insect pests in stored grain should be conducted so as to really understand the various kinds of insect pests, the damage they cause, and their distribution in order the better to guide research on insect pests in stored grain and to formulate measures for prevention and control.

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NINGXIA HOG OUTPUT INCREASE REPORTED

Yinchuan NINGXIA RIBAO in Chinese 28 Feb 81 p 1

[Article: "Actively Support Livestock and Poultry Production to Provide for People's Livelihood; Gross Weight of Live Hogs Purchased Last Year by Ningxia Province's Commercial Units As Well As Hog Slaughter Rate and Commodity Rate Increased Over Several Previous Years"]

[Excerpt] The following was obtained from the Autonomous Region Food Company. Last year alone, Ningxia commercial units purchased 4.05 million jin of fresh eggs, 500,000 jin more than during the previous year. Live hog purchases totaled 193,000 head with hogs averaging a gross weight of 148.8 jin per head, an 11.9 jin increase over the previous year. The hog slaughter rate and commodity amount increased over what it had been for the past several years. Sheep purchases amounted to 118,000 head. Quantity of lamb supplied country fair markets amounted to more than 2.8 million jin, and the market price of lamb was fairly stable.

As a result of the bolstering of administration and management, during last year alone losses were 1.6 million yuan less than plan. Losses per live pig declined from 13.65 yuan in 1975 to 5.54 yuan. Live hogs fed by feeding farms were fattened without loss, and cold storage plants for pork also began to show profits.

For many years the pork supply in Ningxia Province has been extremely scarce, and administrative work has focused on purchases. Last year a substantial change took place in the pork market. The focus of the work of administrative units in Ningxia was changed from purchases to equal emphasis on purchases and sales, with active promotion of sales, so that sales would stimulate purchases and purchases would stimulate production. At first some units feared losses for which reason they would not actively engage in purchase and sales work. But last year, after financial units and commercial bureaus instituted the practice of "guarantee against losses up to a certain amount, no restitution for excess losses above that amount, and sharing of reduced losses" in dealings with units of the food company having losses, and "sharing of profits" with enterprises making profits, the enthusiasm of workers in food enterprises to do a good job of administration and management was aroused. Additionally, several major cold storage plants in Ningxia Province actively began the business of hog skinning, and last year they skinned 73,000 hogs throughout the region, six times the number of the previous year. The skinning of hogs not only increased raw materials for industry and expanded the sale of pork, but earnings from hog skinning alone amounted to as much as was derived from the sale of more than 800,000 jin of pork, thereby reducing subsidies by the state treasury.

A person in charge at the autonomous region food company said that 1981 was a year of great changes in the pork, poultry, and egg market. In order to diligently carry out readjustment programs, further promote the development of production, and satisfy the needs of the people's livelihood, special attention must be given this year to pork market arrangements.

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CSO: 4007/316

BRIEFS

DROUGHT RELIEF--Huantai County, Shandong Province, is determined to reap a bumper harvest on its 400,000 mu of wheatfields. Since last fall, Huantai County has suffered successive droughts, which pose a great threat to wheat growing. To relieve the drought and reap a bumper wheat harvest, the county CCP Committee and government have mobilized people throughout the county to relieve the drought. Sluice gates have been built in river courses throughout the county to hold water, raise the underground water level and irrigate wheatfields. Over 9,000 irrigation and drainage machines are now used to irrigate wheatfields around-the-clock. As of early May, the county's 400,000 my of wheatfields had been irrigated twice. [Jenan Snadong Provincial Service in Mandarin 2300 GMT 13 May 81 SK]

DROUGHT-RELIEVING MATERIALS--Supply and marketing departments in Shandong Province have made vigorous efforts to help relieve drought by supplying ample drought-relieving materials to rural areas. Many supply and marketing cooperatives in counties in Jining, Linyi and Changwei prefectures have established leading groups for supplying drought-relieving materials. By the end of April, some 1.54 million tons of chemical fertilizer and pesticides had been delivered to commune members. In addition, supplies of many other essential materials such as farm tools and diesel oil have been increased. [Jinan Shandong Provincial Service in Mandarin 2300 GMT 13 May 81 SK]

CSO: 4007/396

SIDELINE PRODUCTS, SALES AT SHANGHAI MARKET DESCRIBED

Shanghai WEN HUI BAO in Chinese 19 Mar 81 p 1

[Article: "Market Purchase and Sale of Shanghai Municipality's Agricultural Sideline Products Flourishing"]

[Text] In recent years, Shanghai city's sideline products markets have become enlivened and have flourished, and the products have been numerous and varied, so that they have served to supplement the socialist economy.

At the end of last year the Shanghai city sideline products market had expanded to 64 locations, 8 more than in the previous year, resulting in a situation of "four increases and one steady" (business volume increased, quantities increased, the number of varieties increased, the number of persons selling commodities increased, prices remained essentially stable), and a flourishing situation in which the slack season was not slack and the busy season was even busier.

Last year the sales volume for sideline products in Shanghai city was 77,890,000 yuan, an increase of more than 3 times over the previous year, and the average country fair volume per person was 13 yuan, an increase of 3.3 times over the previous year's average of 3 yuan per person. Some 3,890,000 trips were made to the Shanghai city sideline products markets to sell commodities. There were more than 150 different varieties of commodities, up 13 percent from the previous year's figure of 133 varieties.

This January, the city's sideline products market continued to expand, and the volume was more than 12 million yuan, more than doubling the figure for the same period in the previous year. The volumes for poultry, aquatic products, dried fruits and vegetables were up 88.6 percent, 1.2 times, 1.9 times and 5.6 times respectively over the same period last year.

The sideline commodities at the market were brought early and taken away late. For example, in the cold of December soft-shelled turtles could be bought at the market at any time. The products at the country fairs came from more than 100 counties in 25 provinces and municipalities of the country, were in extensive supply and moved rapidly. There were tender fresh vegetables, fresh lamb, beef and pork, and plump chickens and ducks, and abundant supplies of black carp, grass carp, crucian carp, bream, hairtails, yellow croakers, eels, butterfish and other fresh water and salt water fish; there were also lively shrimp, incomparably flavorable wild chickens and ducks, and products which have long been scarce on the state market such as soybeans, shelled peanuts, mung beans, sesame seed, muskmelons, bean curd skins, fuzhu [soymilk skin rolls], dazha crabs, xianggu mushrooms, tree ears, golden needles and the like. Last year more than 12 million jin of tangerines, 2.9 million jin of shelled peanuts, 5.5 million of dazha crabs, 1.7 million jin of soybeans, and 2 million jin of ricefield eels were brought to the market, bringing the market adjustment effect into play.

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CSO: 4007/388

BRIEFS

VEGETABLES REGULATIONS--The Shanghai Municipal CCP Committee and People's Government on 11 May issued regulations on improving the production and supply of vegetables. According to the regulations, vegetable production teams should be provided a sufficient labor force which should not be transferred for other purposes; communes and brigades that have allotted vegetable plots for other purposes without authorization will be fined; and this year's vegetable procuring price will be 10 percent higher than last year's, while vegetable retail prices will remain stable. In order to strengthen leadership over this work, the municipal CCP committee and people's government have formed a municipal vegetables leading group consisting of 11 comrades, with Wang Daohan as leader and Chen Zonglie and Pei Xianbai as deputy leaders. [OW142113 Shanghai City Service in Mandarin 2300 GMT 13 May 81]

CSO: 4007/396

NEW TECHNIQUES IN DRYLAND AGRICULTURE VIEWED

Taiyuan SHANXI NONGYE KEXUE [SHANXI AGRICULTURAL SCIENCES] in Chinese No 1, Jan 81 pp 14-16

[Article by Zhang Liang [1728 0081]: "Preliminary Views on Dryland Agriculture"]

[Text] 1. A Talk about Shanxi's Agriculture

In terms of natural conditions, agricultural production in Shanxi is characterized in two different ways. Nine out of 10 years have inadequate rainfall, and 3/4 of the land is dry. In the period since the founding of the People's Republic, water conservancy projects throughout the province have born fruits. Wetland and irrigated areas of the province have increased from 3.69 million mu in 1949 to more than 16.8 million mu in 1979. No doubt continued future attention will have to be given to water conservancy construction for scientific planning in the irrigated area. In overall terms, however, the guiding ideology must be to give major attention to dryland agriculture, for the following reasons:

1. Shanxi is located on a highland where water resources are limited. Shanxi's surface runoff is estimated to be 11.68 billion cubic meters of which 82 percent leaves the province while only 0.63 percent remains within the province; thus little can be directly used by the province. Subterranean water resources amount to about 5.55 billion cubic meters, much of which has been tapped with little remaining. Ours is not a situation of inexhaustability. Conversion of upwards of half the cultivated land in the province to irrigated land does not seem to be possible now or in the foreseeable future.

2. Quantity of industrial water use increases daily. The quantity of water now used by agriculture throughout the province is 10 times greater than during the period immediately following liberation, but industry's use of water has increased 27 fold. Use of water by industry and the populace of Taiyuan during 1978 was 58 times what it had been in 1950. The future development of four modernization construction must inevitably result in a dramatic increase in the use of water by industry and by the city. Therefore, in planning the use of water resources, one cannot take into account only the needs of agriculture. It is estimated that by the year 2000, industrial production and urban living will require 13.91 billion cubic meters of water while only 10 billion cubic meters can be developed for use. A great conflict will exist between supply and demand, so how will it be possible to expand the area of irrigated land to one's heart's content.

3. Serious ecological problems have already appeared as a result of blind tapping of water resources. As a result of blindly sinking wells to tap underground water resources for agricultural production without a modicum of restraint, the underground water table has dropped everywhere. It used to be possible in many places to use carrying poles to lift water out of wells, but now deep well pumps are needed. Reportedly the undeground water table in Jincheng County dropped by 18 to 25 meters last year, and water in shallow and middle strata was almost exhausted. More than 300 shallow and medium-depth wells were rendered useless, and only 330 out of 812 machine-operated wells could pump water. During the 1970's, the water table in Yuncheng County dropped more than 30 meters, and in Jinjing Commune, where there is a high concentration of wells, it dropped by from 40 to 60 meters . If this continues, within a short time numerous places now irrigated will revert to drylands, and it should be realized that once this ecologically disastrous situation comes about, it will be difficult to reverse.

Looked at in terms of benefits derived from investment in water conservance for farmland it is noted: during the 1950's to bring new land under irrigation required 28 yuan per mu; during the 1960's it averaged 95 yuan per mu; and during the first 5 years of 1970's it averaged 153 yuan per mu. This shows that the extension of irrigation becomes more and more difficult and requires higher and higher investment. If some "famous wetlands" are eliminated from the averages, the real investment necessary to irrigate each additional mu becomes even higher.

Shanxi has more than 58 million mu of cultivated land, of which only somewhat more than 14 million mu is maintained under irrigation. Per unit yields are very low on the large tracts of drylands; consequently the potential for increased output is great. We must seek truth in facts in undertaking some dryland agriculture.

2. The Concept of Dryland Agriculture

It is customary in China to describe fields as being wetlands, irrigated lands, or drylands, and agricultural science correspondingly studies wetland agriculture, irrigated agriculture, and dryland agriculture. Foreign countries have organizations devoted to the study of arid and semi-arid areas of agriculture, and they also have the concept of drylands agriculture. The former applies to a natural division on the basis of rainfall, while the latter applies to agricultural lands other than wetlands. Our usage of drylands refers to cultivated land other than wetlands or irrigated lands. Dryland agriculture means agriculture carried out on cultivated land where conventional irrigation (surface irrigation) cannot be carried out. It includes both drylands other than arid and semi-arid regions, and also includes cultivated land where special irrigation methods (underground seep irrigation and drip irrigation) are used.

One should not suppose that dryland agriculture means primitive "agriculture dependent on heaven," or that it is a concept incompatible with modernization. Dryland modernization may be done on drylands. The production potential for drylands is naturally not the same as for irrigated land, but it is not inevitably linked to low ouput either. In fact, during years of normal rainfall, the output from fertile drylands, is no lower than that from irrigated land of low or medium fertility, and in dry years, the output of some drylands if higher than that of most irrigated lands. China has many examples of high output from drylands. In 1979, units concerned jointly verified yields of more than 1000 jin per mu from 3 mu of high output millet fields in the

Jinzhuang Brigade of Huguan County. Last year wheat output generally declined as a result of drought and winter kill, but per unit yields of wheat from drylands in the Yipingheng Brigade of Linfen County were consistent with harvests in ordinary years, being close to 300 jin per mu.

In reality, China's irrigated land is by no means slight. China's irrigated land constitutes 40 percent of the irrigated area of the entire world. Though there is a lot of dryland in Shanxi, the irrigated area also amounts to 28.6 percent of the total cultivated area, a much higher proportion than in some industrially advanced countries. Canada's irrigated land area amounts to 1 percent of the area used for agriculture. Canada's main grain growing areas are in Manitoba, Saskatchewan, and Alberta where the area devoted to agriculture is 80 percent of the national total, and where the grain growing area accounts for 85 percent of the total, and wheat growing area accounts for 97 percent of the total. These 3 provinces have from 340- 500 millimeters of rainfall per annum, and the frost-free period is about 100 days. Natural conditions are by no means superior and the threat of drought is very serious. Nevertheless, since they have adopted a series of planting measures to combat drought, per unit yields are higher than ours.

Facts from inside and outside China have shown that dryland agriculture offers opportunities, the key lying in the use of dryland methods to farm dryland. This is a problem that dryland agriculture needs to study to obtain a solution. In the vast dryland areas of China every year drought must be guarded and fought against, and generation after generation has guarded against and fought drought. Agricultural production is very passive. If dryland farming were really done in these places, intensive farming could not be abandoned because outputs would not be as high as from irrigated land, nor would the unrealistic water conservance projects have to be blindly built. With dryland agriculture, the "millstone fields" would be fewer and agriculture throughout the country would have hope for long-term development.

3. Reasons for Low Output From Drylands and Means to a Solution

The main reasons for China's current low output from drylands are as follows:

1. Lack of a good ecological system. Dryland agriculture is quite heavily dependent on the natural environment, and it makes more necessary the establishment of a good natural ecological system and a farmland ecological system. But we have neglected this important matter. In a larger sense, the ratio of farming to forestry and livestock raising is out of balance. Forests are too few; the livestock industry is too antiquated; the climate is dry; erosion is serious; and fertility is insufficient. In a smaller sense, a single crop is grown and pulses are particularly lacking as is pasture grass and green manure. Consequently a vicious cycle exists in moisture and nutrient material.

2. Poor soil, particularly a lack of organic material. Fertile drylands are characterized by good water conservation. The root systems of crops develop; their absorption capacity is strong; and their utilization rate of the limited water stored in the soil is high. According to experimental data from Dongguanzhuang dryland, highly fertile soil can produce 1.36 jin of wheat for each millimeter of water consumed; medium fertile soil can produce 0.99 jin; and infertile soil can produce only 0.52 jin. The water utilization rate for highly fertile soil is 1.6 times that of

infertile soil. In Shanxi most dryland soil is of low fertility with organic content being only about 0.5 percent. Some highly fertile individual soils have a 1 percent organic content. The 1,000 jin high output millet fields of Jinzhuan have a 2.69 percent organic content.

3. Lack of superior varieties suited to dryland cultivation and lack of corresponding farming methods.

Negligence in farming is the major cause of low output from drylands. Quite a few people (including leaders, producers, scientists and technicians) feel there is not much "profit" to be made from drylands and that reliance on wetlands is the way to win the red flag. Consequently everyone "vies" on the welands. Even though the investment of labor, funds and fertilizer in some irrigated lands may be very wasteful, there is an unwillingness to use some of them to rescue the drylands. Those who give serious attention to drylands are few in number, weak in strength, and lacking in effort.

The main point in the farming of drylands is the accumulation of water and the conservation of moisture, storing as much natural precipitation as possible, reducing evaporation from the soil and transpiration from crops, effectively conserving and fully using moisture in the soil.

To sum up, in order to change the low output of drylands it it necessary, first of all, to arouse people's attention so that they watch wetlands with one eye and watch drylands with the other. Among measures to be used, the first is vigorous afforestation, the planting of grass and the development of the livestock industry in order to increase the quantity of precipitation (though limited, it cannot be ignore), reduction of erosion, and increasing the sources of organic fertilizer. Second there must be a good job of building farmland bases, thickening of the active layer of soil, and adopting various means to increase soil fertility, particularly its organic content. Third there must be expanded growth of crops that tolerate dryness, and active breeding of drought resistant varieties, plus the summarization, research, and extension of dryland farming systems and cultivation techniques. China's peasants have abundant experience in dryland production. "Needs of the Masses" was an encyclopedia of agriculture from the middle and lower reaches of the Yellow River in ancient times. Unfortunately many traditional experiences were deemed products of a small farming economy and discarded. Since liberation the masses have again created quite a few new experiences such as "store water and conserve moisture so as to use summer rainfall in the springtime" from Dongguanzhuang, and the "three moistures" from Jinzhuang, experiences in working the soil that are very valuable. Unfortunately, they have not been conscientiously promoted. Furthermore, it is also necessary to absorb and emulate some good foreign experiences such as those used in the previously mentioned three Canadian provinces of letting the ground lie fallow in summer, strip farming, leaving the stubble to winter over, covering the ground with stalks and stems, the growing of shelter forests, and such measures to combat drought.

4. Launching Scientific Research on Drylands Agriculture

Drylands amount to more than half the 1.5 billion mu of cultivated land in China, yet there is no drylands agriculture research organization nor even a special laboratory. Drylands agricultural research projects and research personnel are few and far between. Those going into high output units to "make perfection still more perfect" are numerous (and this is admittedly necessary), while those going into low output areas to "provide timely help" are few (and this is more urgent). These tendencies should be faced up to.

Naturally, the characteristics of dryland agriculture are not entirely the same as for irrigated lands, and numerous problems requiring research exist, such as ways of using drylands and paths toward modernization, economic benefits of drylands agriculture, drylands soil structure and the laws governing the motion of moisture in soil, the actions of soil micro-organisms, laws governing the transformation of organic and inorganic fertilizer nutrients, physiological characteristics of drought tolerant crops and varieties, genetic laws, the drought resistance mechanism, drylands farming methods, and farming techniques for combating drought, etc. It is necessary, as well, to study applications of new techniques such as growing plants using plastic sheeting ground cover, and the preparation of chemicals to reduce ground evaporation and transpiration from the leaves of plants.

Dryland agriculture is not a prohibition against the use of a drop of water, and no one involved in actual production would be so foolish as to say it is. Thus, drip irrigation, seep irrigation, and such irrigation techniques may be made a part of dryland agriculture research.

In the field of agricultural science, dryland agriculture is one branch that could constitute a study all its own. It is hoped that a book on dryland agriculture that is Chinese in character will be written.

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ZHEJIANG PUBLISHES NEW REGULATIONS ON LAND USE, CONSTRUCTION

Commentary on Regulations

Hangzhou ZHEJIANG RIBAO in Chinese 21 Mar 81 p 1

[Editorial: "Resolutely Put a Stop to Indiscriminate Takeovers, Misuse and Waste of Agricultural Land"]

[Text] The standing committee of the provincial People's Congress has issued the "Zhejiang Province Management Procedures for Land Takeovers for State Construction and the Use of Land for Construction by Rural Communes and Brigades (Trial Implementation)," a highly timely and necessary document which strengthens land management.

Our province has a limited amount of land and a large population, and agricultural land is extremely precious. In the 30 years since Liberation, because land has been taken over for construction by various parties the amount of agricultural land has decreased sharply and is still decreasing. What is particularly worth noting is that in the last year or more, indiscriminate takeovers, misuse and waste of agricultural land have been rather serious. Many units use land for construction without giving compensation, or use it and only afterwards make a requisition for it, or use more than they have requisitioned. In the process of developing commune and brigade enterprises, they pay no attention to conserving land, and they waste it. Rural housing construction is unplanned, and indiscriminate taking over and waste of land is rather widespread. In a few localities there have even been illegal sales of land, destruction of fields to build housing and other such unhealthy trends which harm collective interests. These circumstances have already hindered agricultural production and have caused dissatisfaction among the cadres and masses. Accordingly, the drawing up and application of land management methods and the rational utilization of land and the protection of agricultural land are important matters which urgently require effective action on behalf of agricultural production.

In order to make thorough, rational use of land, planning is necessary, and comprehensive management of the land should be practiced. In the past, land management and use have lacked planning, and management has been practiced only in regard to land taken over for state construction, while there has been no management of land used for commune or brigade enterprise or commune members' housing construction, which represented a great loophole in land management. Accordingly, the cadres and commune members should be educated and made clearly aware of the importance of comprehensive management of lands so that they will consciously follow the regulations and thereby put a stop to the chaotic situation of unplanned, uncontrolled unsupervised land management and use.

All localities, all departments, all units and the people's communes must strictly implement these measures and resolutely put a stop to indiscriminate takeovers, misuse and waste of agricultural land. The cadres and masses must be educated so that they see the importance of preserving agricultural land in terms of the overall agricultural system. Every comrade should consider: If every year the amount of agricultural land is decreased by 100,000 mu, what effect will this have on agricultural production, on the people's livelihood and on economic construction? Agricultural land is a critical material asset for agricultural production. Large decreases in the amount of agricultural land will inevitably hinder the production of foodstuffs and economic crops, harm the development of light industry and textile production, and hurt market supplies and the people's livelihood. Accordingly, protecting land is an important matter which affects the whole of our province's agricultural production and economic construction and which must not be taken lightly.

After the publication of the land management procedures, it will be necessary to proceed in accordance with the law, and those who disobey it must be dealt with. Extensive propaganda and education should be conducted. Behavior which violates the land management procedures should be dealt by law according to individual circumstances.

In order to strengthen land management and deal in timely fashion with illegal activity which violates the land management procedures, all localities must set up land management organization in the leading agricultural departments and must keep them in good condition and staff them with cadres. The land management departments at all levels must exercise their functions in accordance with the law. All departments and all units must support the land management departments and personnel in their work.

Test of Draft Regulations

Hangzhou ZHEJIANG RIBAO in Chinese 21 Mar 81 p 3

[Text of regulations passed at 7th session of Zhejiang Province standing committee of 5th People's Congress on 9 March 1981: "Zhejiang Province Management Procedures for Land Takeovers for State Construction and the Use of Land for Construction by Rural Communes and Brigades (Trial Implementation)"]

[Test] In order to protect the socialist public land ownership system, to make economical and rational use of land, to protect agricultural lands, to stimulate the development of the national economy and to accelerate socialist modernization and construction, on the basis of the "Procedures for Land Takeovers for State Construction" issued by the State Council and the relevant regulations and in keeping with this province's particular circumstances, we designate these procedures.

Section 1. General Principles

Article 1. Land is the country's precious treasure, agriculture's basic means of production, and an essential base for the activity of all production and construction and for the people's livelihood. This province has a large population and limited land area, and the land is extremely precious. Using and managing it well is an important responsibility of People's Government organizations at all levels and of the people of the entire province.

Article 2. All state-owned land is managed by the People's Government land management departments at the county level and above, and it may not be encroached upon by any unit or individual.

The lands of the rural people's communes, production brigades and production teams, including commune members' dwelling areas and private plots, are collectively owned. No unit or individual may encroach upon them. The commune members have the right of use of the dwelling areas and private plots.

No state-owned or collectively owned land (including commune members' dwelling land and private plots) may be sold, sold in disguised form, rented out or transferred without authorization.

Article 3. State construction, commune and brigade capital construction and commune members' dwelling construction must cherish and conserve the land and must refrain from taking agricultural lands or take the minimum amount possible.

Article 4. People's Government bodies at all levels and people's communes must strengthen their management of the land. They must draw up regulations for protection of agricultural lands and rational land use. When land is taken over for state construction or when rural communes and brigades use lands for construction, they must establish a management system and must strictly examine and approve the procedures in accordance with the examination and approval jurisdiction specified by the present procedures. No unit or individual may take or use land without authorization.

Article 5. The land management departments of the provincial, prefectural, municipal and county People's Government agricultural offices and bureaus shall exercise unified management of land. State-owned land within cities shall be subject to unified management by the municipal construction departments.

Section 2. Takeovers of Land for State Construction

Article 6. In case of state and local construction projects included in the plan which require takeover of land, the unit which is to use the land for construction must, in accordance with the basic construction procedure, apply to the relevant county or municipal land management department or municipal construction planning department, furnishing a plan approved by the next higher level planning department (large- and medium-size projects require more extensive preliminary design), and must select the construction site, determine the area of land to be taken over, and execute the land takeover procedures.

Land to be taken over must be taken over stage by stage in accordance with an approved construction plan and engineering schedule, and only to the extent that it is needed. Takeovers of land which is not used, takeovers of more land than is needed, and takeovers before the requisition procedure has been complied with must be stopped.

In the case of land takeovers for municipal construction, once the site is determined, the municipal construction departments shall organize and carry out the land takeover procedure in unified fashion.

Article 7. Examination and approval authority. Takeover of 1 mu or less of agricultural land or of 3 mu or less of nonagricultural land is subject to examination by the county land management department and approval by the county People's Government; takeover of 1 to 2 mu of agricultural land or 3 to 5 mu of nonagricultural land shall be examined by the prefectural land management department and approved by the prefectural administrative office; takeover of more than 2 mu of agricultural land or more than 5 mu of nonagricultural land shall be examined by the provincial land management office and approved by the provincial People's Government.

Vegetable plots in city suburbs shall be strictly controlled and in general may not be taken over.

When the takeover of land has been approved by the prefectural, municipal or county levels, a report must be made to the province land management departments.

When state-run farms, forest preserves, stock-raising farms and fish farms carry out capital construction and need to use agricultural land for the purpose, the matter must be examined by the cognizant department, which must report it to the province, prefecture, municipality or county land management office, depending on the conditions, for approval.

Article 8. In takeovers of production teams' land, the principle of simultaneously taking account of state interests, collective interests and individual commune members' interests must be observed and economic compensation given.

Compensation for land must be based on the land area in terms of the actual output value in the last 2 to 4 years and agricultural land capital construction investments over the same period, and the compensation must be made as a lump sum by the unit which is to use the land. In the case of vegetable plots, economic forest lands, breeding ponds and buildings, ditches, piping, [illegible] and other production and livelihood facilities on the land, a reasonable compensation should be made in terms of the specific situation. The organization which is paid the land compensation cannot also arrange the recruiting of workers.

The land compensation payment may only be placed in the funds for land reclamation, increasing agricultural industrial and sideline production, or expanded reproduction; it cannot be distributed as collective profit or transferred to other uses. People's communes or land management offices shall exercise supervision of the use of land compensation funds.

Compensation for young crops shall be handled on the principle of "compensated when present, not compensated when absent." When a production team has received the notice of approval of the land takeover, it may not make a rush planting on the land to be taken over; if it does so, it will not be compensated.

Article 9. After a production team's land has been taken over, excess manpower may be placed with the commune or production brigade forest area, stock-raising farms or fish farm, or the commune or brigade enterprises, or it may be placed by the unit which will use the land in accordance with the procedures for support of the development of commune and brigade enterprises.

If the communes or brigades have trouble placing workers, then workers who have been placed using the recruiting method must primarily be placed in collective enterprise or service units in accordance with recruitment conditions. The number of workers to be recruited shall be set in terms of the proportion between amount of land and available manpower, and approved by the municipal or county labor departments, and a report made to the province labor department for the record.

Bodies which arrange for recruiting labor will not be given further land compensation.

Placement of labor should be the responsibility of the unit which will use the land. If certain units have difficulty, the local labor department shall help them with the placement.

In the case of state-constructed large reservoirs, hydroelectric stations and communications and defense facilities which involve resettlement, the cognizant People's Government bodies at the county level and above shall take energetic and effective steps to suitably relocate the people affected.

In case of the construction of medium and small water conservancy projects where resettlement is required, suitable settlement should be carried out according to the principle that the area and units to be benefited should take the responsibility.

When a production team's land has been taken, their food purchase indices and agricultural tax must be adjusted. The amount of the adjustment shall be arranged by the county and municipality. When the amount is rather large, and it is difficult for these organizations to bear it themselves, it may be suitably adjusted by the province or prefecture.

A unit whose land is to be taken must comply with the needs of state construction. When a reasonable compensation and suitable placement have been effected, they must hand over the land in question at the designated time, and may not make unreasonable requests outside the scope covered by policy and regulations.

Article 10. Cases of land which was taken by an organization on its own account without regulation inspection and approval procedures before the promulgation of the present procedures, shall be dealt with by the land management departments at the various levels. In cases where construction has been suspended or slowed, or where the land has been taken but not used, and it can be planted by the production team, it must be returned immediately without compensation or worker placement when it is needed for state construction.

Article 11. Areas temporarily used for materials dumps, roads, work sheds and the like by the unit performing the construction must be placed within the land whose takeover has been approved. If this cannot be arranged, the construction unit may file an application and secure the county land management office's permission to borrow a small amount of land for a period not to exceed 2 years. Permanent structures may not be built on the borrowed land. A suitable compensation must be given during the borrowing period. After construction is finished, this land must be put in order expeditiously, leveled and returned to the original unit.

Article 12. When a construction unit takes over agricultural land, it must pay a land improvement fee to the county or higher level land management office in accordance with regulations. This sum must be used for improvement and may not be transferred to other uses. The fee guidelines and fee use procedures shall be designated by the provincial cognizant agricultural department jointly with the other relevant departments and forwarded to the provincial people's government for approval, published and implemented.

Section 3. Use of Land for Construction by Rural Communes and Brigades

Article 13. When rural people's communes, brigades or production teams carry out commune or brigade enterprise, service or public construction, they must proceed in a way that fosters the development of agricultural production and the construction of a new socialist countryside, carry out unified planning and rational disposition, and as far as possible use waste land, miscellaneous land, vacant land, or residential land, and refrain from taking agricultural land or take only a small amount.

Article 14. When communes or brigades need to take over agricultural land for an enterprise or service, they must secure approval of the county or higher level cognizant department for the construction documents and layout maps and carry out the proper inspection and approval procedure. In cases when 1 mu or less is taken over, the people's commune shall investigate and report to the county land management office for approval; when more than 1 mu is taken, the county people's government shall issue approval; *when more than 2 mu is taken, the prefecture administrative office shall issue approval; when more than 3 mu is taken, the provincial people's government shall issue approval. In all cases where new commune enterprises or services are built in suburbs of cities and towns, the approval of the municipal planning management office must also be obtained for the proposed location of construction.

Food purchase indices shall not be adjusted in the case of land used for rural commune or brigade construction.

Article 15. Brick or tile kilns operated by rural communes or brigades for commodity production must be strictly controlled and agricultural land must not be taken for them if at all possible. Cases in which such kilns have already been built shall be dealt with by the county-level cognizant department of the commune or brigade enterprise. In cases where permission is given for continued production, the area which they occupy shall be determined by the commune and reported to the county People's Government for permission. Land taken in excess of regulations must be returned to the production team for cultivation. Indiscriminate excavation of agricultural lands is forbidden.

Article 16. When the land is taken by permission for joint plant-brigade enterprises, the land inspection and approval procedure of Article 14 must be complied with. The land may not be used without permission.

Article 17. Cases of land occupied for a rural people's commune or brigade enterprise or service, it must be put in order, and in all cases where more land has been taken than is needed or where land taken has not been used, it must be quickly returned to the production team for cultivation.

Section 4. Use of Land for Commune Members' Dwelling Construction

Article 18. Construction of residences by rural commune members must be under the leadership of the people's commune and must observe the principles or relative concentration, rational layout, conservation of land, benefit to production, and living convenience, must be subject to unified planning by the brigade or production team and must be passed by the general meeting of commune members, approved by the commune and reported to the land management office for its records. Due importance should be accorded to residential construction for commune members, but it is necessary to put a stop to indiscriminate building of dwellings and wasting of land.

Article 19. When commune members build residences they must comply with regulations and as far as possible use residential or waste land, hillsides and uncultivated land. Commune members' private plots must be used for cultivation. They must not encroach on commune or brigade land or on private plots for unauthorized construction. If there is a genuine need to use a small quantity of agricultural land (including the private plots), this must be discussed by the general meeting of production team members and passed, and the commune must examine the plan and report it to the county land management department for approval.

Section 5. Punishment for Violation of Land Management Procedures

Article 20. Starting from the date of publication, those who violate the land management procedures will be dealt with in accordance with the gravity of the situation.

1. Sale or covert sale of land (including commune members' residential land and private plots) shall in all cases be invalid. It shall be declared null and void and both parties may be fined or the illegal gains confiscated.

Ringleaders of plots to sell collective land or those who try to resell land for large profits shall be strictly dealt with and criminal responsibility determined.

2. In cases where collective land is taken without authorization for construction of dwellings, the offenders shall be required to compensate economic losses and fined in accordance with the seriousness of the case.

In cases where state-owned land is encroached on to build residences, the dwelling shall be recovered at a reduced rate, confiscated or demolished in accordance with the seriousness of the case.

If state workers use their official powers to encroach on state-owned land or illegally sell or encroach on collective agricultural lands for dwellings construction, the criminal responsiblity shall be determined and administrative disciplinary measures, fines or confiscation imposed.

3. Renting of land must be resolutely ended. When this rule is violated the responsibility of the leadership personnel of the unit which rents the land out and that which rents it must be determined, administrative disciplinary measures taken and the land returned at a designated time. In serious cases restitution for economic damage or a fine may be required.

4. In cases of violation of approval authority and unauthorized approval of the taking over (or occupation) of lands, the land management department has the right to refuse to proceed with the takeover procedure, to file a complaint with the higher level organizations and to determine the administrative responsibility of the persons who have committed the dereliction of duty.

5. In cases of refusal to carry out the regulations and agreements regarding land takeovers or failure to return borrowed land according to regulations, the offenders are responsible for compensating economic losses.

6. If state personnel use their powers during the investigation and approval process to take bribes or engage in embezzlement for their own gain, their administrative responsibilities and where applicable their criminal responsibility shall be determined.

In dealing with the abovementioned violations, such penalties as fines, confiscation and required compensation shall be determined by the land management departments at the county level and higher; administrative punishment shall be determined by the cognizant department in accordance with cadre management authority; determination of criminal responsibility shall be made in accordance with the law by the people's courts.

Article 21. Illegal sale, rental or use of land before the publication of these procedures and after 1 January 1979 shall be handled in accordance with the specific circumstances.

In cases of sale of land between commune members, when a house has not been built the land must be returned and the price repaid. When a house has already been built, the land shall still be the property of the production team.

If city inhabitants sell or occupy a production team's land, if a house has been built and the land is under state ownership, the matter shall be handled by the local real estate management department, and a real estate tax levied.

If any unit rents or encroaches on a production team's land without authorization, if the land has not been used, it shall in all cases be returned to the production team; if permanent structures have been built on it, they must pay an additional land improvement fee, and go through the land requisition process.

In handling these matters, in the case of the violations of land management procedures listed below fines, administrative punishment or determination of penal responsibility all be conducted in accordance with Article 20:

1. Sale or concealed sale of land so as to make windfall profits;

2. Rental of land at a high price for illegal gain;

3. Serious cases of illegal renting and use of land;

4. Use of their offices by state personnel for illegal sale or use of a production team's land to build a house;

5. Serious embezzlement by state personnel.

Article 22. The proceeds of fines or confiscation in the case of violation of land management procedures shall be centrally managed by the cognizant agricultural departments at the county level and above for land improvement; they cannot be transferred for other uses.

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Article 23. These procedures shall be overseen and implemented by the land management departments and municipal construction departments of the People's Government at the various levels and by the people's communes. In case of violations of these procedures, the people's communes, the land management offices and the municipal construction offices have the right to put a stop to them and deal with them. All departments must support the people's communes, land management departments and municipal construction departments in carrying out land management. The people have the right, in case of violations of these procedures, to report, expose and complain. The units or persons who are reported or complained against may not take reprisals.

Article 24. If units or persons fined or given administrative punishment for violation of these procedures have a grievance they may submit a petition, which will be ruled upon by a higher level cognizant department or people's court. If without good cause they refuse to comply, the people's court may enjoin them to comply.

Article 25. These procedures enter into force on the day of their publication. All municipal and county people's governments may designate specific implementation measures on the basis of these procedures and in keeping with the local conditions.

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Preliminary Observations on Parasitic Natural Enemies of *Cnaphalocrocis medinalis* Guenee......Zhang Xiaoxi [1728 1321 5032] and Geng Jiguo [5105 3444 0948], both of Nanjing Agricultural College; Lu Ziqiang [7120 5261 1730], Jiangsu Agricultural College (6)

The Discovery of Diapause of the Second Generation of *Tryporyza incertulas* (Walker) in relation to the Prognosis of this Insect......Forecasting Station of Baishiyi Ba Xian, Sichuan (8)

Studies of *Chilo auricilius* Dudgeon and Its Control...... Mei Peijia (10)

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A Preliminary Report on the Oviposition Behavior of *Agrotis ypsilon* (Rottemberg)......He Fugang [0149 1381 0474], Plant Protection Institute, Liaoning Academy of Agricultural Sciences (14)

Multiply the Natural Enemies with Insect Pests: Control Insect Pests with Their Natural Enemies......Huang Yuanda (16)

A Preliminary Report on the Occurrence and Control of Dorysthenes (Paraphus) granulosus (Thomson)......Zeng Chuanfang [2580 0278 5364], Guangxi Agricultural College; Huang Qiongsun [7806 8825 5549], Guangxi Sugarcane Institute (18)

A Preliminary Study on Dioryctria mandacella Studinger...... Zhao Changrun [6392 7022 3387], Gusha Afforestation Institute, Liaoning (20)

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A Tentative Observation on the Bionomics of Oencyrtus sp. ......Zhang Guiyou (24)

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A Preliminary Report on Rhynchaenus alni Linnaeus...... Chen Yuanqing [7115 0337 3237], Institute of Zoology, Chinese Academy of Sciences; Wang Zhaotang [3769 0340 0781], Jianhu Agricultural, Forestry and Aquatic Products Office, Jiangsu (26)

Scientific Note on Sand Flies Attacking Domestic Animals in the Southern Part of Sichuan Province......Liu Kangnan [0491 1660 0589], Institute of Military Medicine, Chengdu Military Region Logistics Department, Sichuan (27)

Effects of Controlling Vegetable Aphids by Insect Juvenile Hormone Analogue 738 and Rogor Mixture......Zhuang Jianguo [5445 1696 0948] and Sun Qingling [1327 1987 3781], both of Hebei Agricultural University (29)

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Influences on Potential Yields of Host Plants Attributed to Insect Pests......Guan Zhihe [4619 5268 0735], Beijing Agricultural University (35)

Developmental Tendency in the Comprehensive Utilization of Insect Resources......Xia Bangying [1115 6721 4481], Institute of Zoology, Chinese Academy of Sciences (41)

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TITLE: "On the Calculations and Applications of the Hough Function: Part I. Calculations"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 1, Feb 81 pp 1-9

TEXT OF ENGLISH ABSTRACT: This study consists of three parts: Part I. Calculations; Part II. Global real-data analysis, and Part III. Global spectral model. In Part I, the present paper, it is intended to review and discuss the accuracy of calculating the Hough function and frequency, the eigensolutions and eigenvalues of a linearized shallow water model over a sphere, and a physical interpretation of $\hat{U}$, $\hat{V}$ and $\hat{Z}$ is also given. The results of calculation will be applied to Parts II and III, which will be written as separate papers.

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TITLE: "Experiment of Convective Parameterization in the Numerical Prediction of Heavy Rainfall"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 1, Feb 81 pp 10-17

TEXT OF ENGLISH ABSTRACT: It is important to incorporate cumulus convection in the numerical prediction model for heavy rainfall. In this paper two convective adjustment procedures and Kuo's parameterization are applied to a case study and used to evaluate convective precipitation. The computed precipitation area is in agreement with the observations, although there are still some discrepancies. Precipitation rate estimates show improvement over versions which followed only stable heating. One of the adjustment procedures is the best for prediction of precipitation areas, however, on the other hand, Kuo's parameterization gives better results for prediction of weather systems.

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TITLE: "The Hard Rainstorms in North China Induced by a Landed Northward-moving and Decaying Typhoon--Hard Rainstorms of Semi-tropical Systems"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 1, Feb 81 pp 18-27

TEXT OF ENGLISH ABSTRACT: In this paper, hard storm rainfall processes in north China induced by a landed northward-moving and decaying typhoon are analyzed. It is shown that under the interaction between synoptic systems of the mid- and low-latitude belts, the hard rainfall-bearing systems possess semi-tropical characteristics.

The characteristics of the semi-tropical cyclone and semi-tropical front are discussed and the difference between the continental and oceanic semi-tropical cyclones is pointed out.

Finally, it is emphasized that further studies of semi-tropical synoptic systems will be of great significance.

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TITLE: "A 320 Meter Meteorological Tower with Automatic Measurement System"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 1, Feb 81 pp 70-81

TEXT OF ENGLISH ABSTRACT: An automatic measuring system of the 320-meter meteorological tower is described. This system is being designed to provide the vertical structure of the meteorological elements that will meet the research objectives of the air pollution and the atmospheric boundary layer.

The sensors to be described are the sensors of temperature at the ground, temperature difference between two levels, wind speed and direction. In addition, the automatic data processing system features are described. This system can be divided into two groups according to the desired sampling rate. One is for the form of profile of the mean wind speed, wind direction and temperature difference. The other is to send the instantaneous data and signals of the fast response sensors.

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TITLE: "On the Stability of the Empirical Orthogonal Function (EOF)"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 1, Feb 81 pp 82-89

TEXT OF ENGLISH ABSTRACT: After a synoptical and statistical analysis of a five-day mean circulation of the 500 mb surface in Asia for 1964-1973, the results of computation and analysis of the renewal data for 1969-1978 are given in this article. It is pointed out that EOF is an invariant if the original data are processed by the centralization method for filtering the seasonal variations. It is shown that the general condition for stability of EOF is the stability of the random process, which will be studied. Therefore, these results may give a physical foundation for the method of long-range weather forecasting by using the EOF technique. Some problems for the application of EOF in meteorology are also discussed in this paper. Some interesting viewpoints on the effective application of EOF are obtained.

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TITLE: "Some Characteristics of the Climatic Changes during the Historical Time of the Qinghai-Xizang Plateau"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 1, Feb 81 pp 90-97

TEXT OF ENGLISH ABSTRACT: Based on tree-ring data, records of meteorological observations, historical literature, pollen records and others, this paper analyzes the state of climatic change for the last several thousand years of the plateau. It may be divided into five significant periods.

The chief characteristics of climatic changes were analyzed. First, the certain basic features of the climatic variation of the plateau are similar to those of other zones of the Northern Hemisphere, and are especially close to those of east China. Second, according to the variability analysis, it can be shown that the plateau is the high variability area. We have calculated two kinds of stability. All results show that the Qinghai-Xizang plateau belongs to the sensitive area to climatic changes within the same latitude zone. In addition, by carrying out analysis on various series, we found some periodicities in climatic change of the plateau.

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